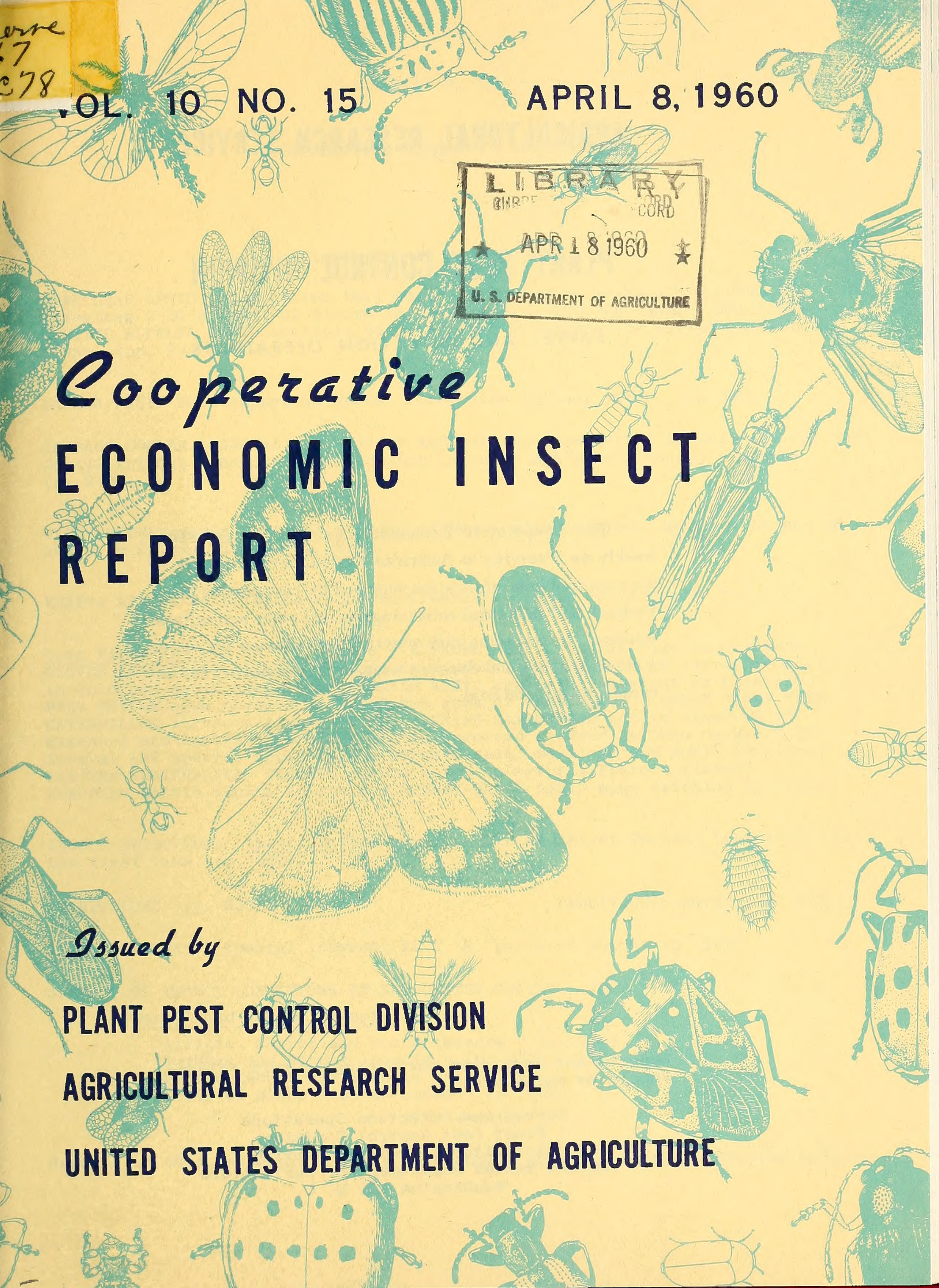
Historic, archived document

Do not assume content reflects current
scientific knowledge, policies, or practices.

rve
7
C78

VOL. 10 NO. 15 APRIL 8, 1960

LIBRARY
CURRENT SERIAL RECORD
APR 18 1960
U. S. DEPARTMENT OF AGRICULTURE



Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.

Volume 10 April 8, 1960 Number 15

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

CORN LEAF APHID infestations very heavy in barley in Arizona. HESSIAN FLY infesting 2-20 percent of plants in central Missouri. (p. 245). PEA APHID and SPOTTED ALFALFA APHID controls being applied in Brazos and Burleson Counties, Texas. (pp. 245-246).

PAPAYA FRUIT FLY trapped in Texas; first time in many years. (p. 248).

CABBAGE LOOPER infestations heavier and earlier than normal in Arizona. (p. 248). POTATO PSYLLID controls being applied in lower Rio Grande Valley of Texas. (p. 249).

GYPSY MOTH buildup reported in several New England states; defoliation may be heavy in several areas. (p. 250).

KHAPRA BEETLE infestation found in Riverside County, California. (p. 252).

Some First Reports of the Season - ALFALFA WEEVIL laying eggs in Colorado. CLOVER LEAF WEEVIL larvae present in Missouri. ARMY CUTWORM larvae present in Colorado and Kansas. GREEN PEACH APHID egg hatch underway in Colorado. PEAR PSYLLA eggs present in Wenatchee area of Washington. GREAT BASIN TENT CATERPILLAR larvae active in Utah. SPRING CANKERWORM adults observed in Missouri and Kansas. FACE FLY adults observed in home in Ohio on March 30. Several ANT species appearing in Pennsylvania, Maryland and North Carolina. EASTERN SUBTERRANEAN TERMITE swarms noted in several Eastern states. EUROPEAN EARWIG adults active and NORWAY-MAPLE APHID eggs hatching in Idaho.

INSECT DETECTION: Imported fire ant found in Red River Parish, Louisiana, for the first time. (p. 252).

CORRECTIONS. (p. 253). ADDITIONAL NOTES. (p. 253).

INTERCEPTIONS of special interest at U. S. ports of entry. (p. 255).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1959

Cereal and Forage Insects

Alfalfa, Clover and Vetch Insects - (p. 256)
Soybean and Peanut Insects - (p. 273)
Pasture and Grass Insects - (p. 276)
Pests of Miscellaneous Crops - (p. 278).

****

Reports in this issue are for the week ending April 1, unless otherwise indicated.

WEATHER BUREAU 30-DAY OUTLOOK

APRIL 1960

The Weather Bureau's 30-day outlook for April calls for temperatures to average above seasonal normals over the Northeast and Far Southwest. Below-normal temperatures are expected to prevail over most of the area lying between the Appalachians and the Continental Divide. In unspecified areas, near normal temperatures are indicated. Precipitation is expected to exceed normal over the eastern half of the Nation except for normal amounts along the Gulf Coast. Subnormal rainfall is expected over the southwestern quarter. Elsewhere near normal amounts are predicted.

Weather forecast given here is based on the official 30-day "Resume and Outlook," published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 a half year.

WEATHER OF THE WEEK ENDING APRIL 4

The week was unusually warm in most sections of the Nation, and precipitation was generally moderate to heavy from the eastern Gulf States northeastward, along the coast of the Pacific Northwest, and over portions of the central Great Plains, Mississippi Valley, and the central Great Lakes area. Generally above-normal temperatures were experienced in most areas east of the Rocky Mountains for the first time since early February. The weekly averages were 5° to 10° above normal from Florida northward to the eastern Great Lakes and western New England, and in the northwestern Great Plains, 3° to 6° above normal in the Far Southwest, near normal from the Pacific Northwest to the west Gulf coast, and below normal in the eastern Dakotas and Nebraska, Iowa, and most of Minnesota. Maximum temperatures ranged in the 70's and 80's as far north as New Jersey, Indiana, Missouri, Nebraska and Washington on one or more days. Scattered 90° readings were recorded in west Texas, Arizona and California. The 92° mark at San Diego on Saturday was the warmest for April there since 1947. Minimum temperatures below freezing were felt as far south as southern New Mexico, northern Arkansas and Ohio, and southwestern New England on one or more mornings. Rapid snow and ice melting, resulting from the moderating temperatures in northern sections of the country and moderate to heavy precipitation in the Middle West and the Northeastern States, caused flooding over wide areas from New England to the central and northern Great Plains, and excessive precipitation in the Southeastern States has produced flooding in that region.

Precipitation totals exceeding 1 inch were general from eastern Louisiana northeastward to central New York, along the Pacific coast from northern California northward, from north central Kansas to the eastern Dakotas, and in scattered areas of Illinois, Wisconsin and Michigan. Heavy rains and thunderstorms associated with cold frontal passages in the Southeastern States continued during most of the week. Precipitation totals of more than 4 inches were general from the central Gulf coast to the Carolinas, and 7 inches or more were reported in scattered areas. Heavy rains fell at midweek in Illinois and Wisconsin, with some record 24-hour totals for March in southeastern Wisconsin. Unusually heavy late-season snowfall ranged from 1 to 4 inches in north central Kansas to 4 to 8 inches (locally up to 16 inches) in eastern South Dakota and 4 to 12 inches in southwestern Minnesota on Friday and Saturday, as a large low pressure area moved north-northeastward over the Great Plains. West of the Rocky Mountains, precipitation covered the Pacific Northwest most of the week. Totals were heavy along the coast, with 3 inches or more general, while 1 to 3 inches were reported west of the Cascades, and lighter amounts in eastern sections and in the Plateau States, while only scattered showers fell over the Desert Southwest. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) - OKLAHOMA - None to very few noted in widely scattered fields of small grain surveyed in northwestern and north central areas. (VanCleave). Populations generally light or noneconomic in fields checked in central, southwest and northwest areas. (Owens, Stiles, Presgrove, Hatfield). Medium (60 per square foot) and heavy (200 per square foot) in two fields of volunteer oats surveyed in Choctaw County. (Goin). TEXAS - Light, noneconomic, populations in 15 northern area counties surveyed except as follows: Wichita County - 2 fields each averaging 25-300 per foot; remainder of fields in area with light and noneconomic infestations. Dallas County - 2 fields in eastern part of county averaged 150-200 per foot and several in Duncanville area about the same. Denton County - One field with 10-15 per foot. (Chada). KANSAS - None found in wheat fields examined in southeastern counties. (Peters). COLORADO - None found in wheat in Baca or Prowers Counties. (Colo. Ins. Sur.).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - CALIFORNIA - Heavy on barley in the Otay area, San Diego County. Myzus persicae also present. (Cal. Coop. Rpt.). TEXAS - Few observed in Denton area. (Chada). OKLAHOMA - None noted in fields of small grain checked in northwestern and north central areas (VanCleave) and in fields checked in southwestern and southeastern areas (Hatfield, Presgrove, Goin). Light in 3 of 5 fields checked in Hennessey area and in a field checked in Major County. (Owens).

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Infestations very heavy in barley statewide; however, percent parasitized becoming high. In general, populations not as high as in 1959. (Ariz. Coop. Sur.).

HESSIAN FLY (Phytophaga destructor) - MISSOURI - From 2-20 percent of plants in central area infested with from 4-40 pupae per 100 plants. (Kyd, Thomas, Munson).

BROWN WHEAT MITE (Petrobia latens) - COLORADO - Not found in wheat in Baca or Prowers Counties. (Colo. Ins. Sur.).

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Populations light, 0-50 per foot in area immediately around Denton-Dallas-Fort Worth area. Absent or very light in remainder of northern area surveyed. (Chada). MISSOURI - Present in very small numbers in wheat in southeastern area. Counts 0-4 per linear foot of row. (Kyd, Thomas, Munson).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - OKLAHOMA - Thirty-one percent of 420 larvae found in 6 Payne County fields were dead. There were few living borers in fields flooded during fall and nearly all larvae removed by birds in one field. (Arbuthnot).

PEA APHID (Macrosiphum pisi) - ARIZONA - Infestations continuing very heavy in alfalfa statewide. Diseased aphids have been found in most areas during past week. (Ariz. Coop. Sur.). NEW MEXICO - Building up in a few fields in northern Dona Ana County. (N. M. Coop. Rpt.). TEXAS - Infestations heavy on alfalfa in Brazos and Burleson Counties, averaging 50 per sweep. Controls being applied. (Randolph). UTAH - Numerous in some Kane and Washington County alfalfa fields. (Knowlton). OKLAHOMA - None noted in alfalfa fields checked in northwestern and north central areas. (VanCleave). Light to noneconomic in other alfalfa fields checked in north central, central, south central, southwest and southeastern areas. (Owens, Stiles, Hatfield, Presgrove, Vinson, Goin). KANSAS - Counts averaged less than one per square foot in alfalfa in southeastern counties. Alfalfa height ranged 1-4 inches. (Peters). MISSOURI - Present in fields in southwestern area that have some new growth. Counts ranged 0-25 per square foot. (Kyd, Thomas, Munson).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - None found in alfalfa fields checked in Socorro and Sierra Counties. Few light infestations found in northern Dona Ana County. (N. M. Coop. Rpt.). UTAH - Present, but scarce, in alfalfa at Kanab, Kane County. (Knowlton). COLORADO - Not found in alfalfa in Baca, Prowers, Bent and Otero Counties. (Colo. Ins. Sur.). TEXAS - Infestations damaging alfalfa in Brazos and Burleson Counties. Counts average 15-25 per sweep. Control measures being applied. (Randolph). OKLAHOMA - None to very light populations (less than 10 per square foot) noted in fields of alfalfa in northwestern and north central areas. (VanCleave). Counts per linear foot in other areas were 9 in a field in Garfield County (Owens), 25 in a field in Blair area of Jackson County (Presgrove), and 10 in a field in Johnston County (Vinson). Counts per square foot of crown area were 30 in a field in Jackson County and 25-400 in 4 alfalfa fields surveyed in Tillman County. (Hatfield). KANSAS - None found in alfalfa fields in southeastern area. (Peters).

ALFALFA WEEVIL (Hypera postica) - NORTH CAROLINA - Larvae, mostly early instars, present. Some fields with lighter infestations than in past years. Larvae and adults active under recent snow cover. (Campbell). COLORADO - Adults active in Arkansas Valley, South Platte and on the Western Slope. Egg laying occurring on the Western Slope. (Colo. Ins. Sur.).

CLOVER LEAF WEEVIL (Hypera punctata) - MISSOURI - Present in limited numbers in alfalfa in the southwestern area. Counts ranged 0-3 first and second-instar larvae per crown. (Kyd, Thomas, Munson).

CLOVER ROOT CURCULIO (Sitona hispidula) - COLORADO - Adults active in Larimer and Weld Counties in alfalfa. (Colo. Ins. Sur.).

ARMY CUTWORM (Chorizagrotis auxiliaris) - COLORADO - Larvae present in some alfalfa fields in Mesa County. (Colo. Ins. Sur.) KANSAS - One larva found in a wheat field in Cowley County. Damage was not evident. (Peters).

CUTWORMS (unspecified) - NEW MEXICO - Killed out large areas of seedling alfalfa near Hatch, Dona Ana County. (N. M. Coop. Rpt.). COLORADO - Not found in wheat. (Colo. Ins. Sur.). UTAH - Not numerous in alfalfa in Kane and Washington Counties. (Knowlton).

ALFALFA CATERPILLAR (Colias philodice eurytheme) - COLORADO - Larvae found in crowns of alfalfa in Larimer and Otero Counties. (Colo. Ins. Sur.).

GREEN CLOVERWORM (Plathypena scabra) - TEXAS - Averaged 5 per sweep on alfalfa in the Brazos River area of Brazos and Burleson Counties. (Randolph).

CITRUS THRIPS (Scirtothrips citri) - CALIFORNIA - Light infestation on alfalfa in Lancaster, Los Angeles County. (Cal. Coop. Rpt.).

SOYBEAN CYST NEMATODE (Heterodera glycines) - KENTUCKY - Five additional farms found infested in Fulton County during February. MISSOURI - Three additional farms found infested in Dunklin County in the Cardwell area since December 1,1959. Intensive soil sampling in Scott County has been negative. (PPC, Cent. Reg., Feb. Rpt.). VIRGINIA - In Nansemond County, 19 additional properties, involving 854 acres, were found infested during February. (PPC, East. Reg.). ARKANSAS - Three additional properties were found in Craighead County and one property in Mississippi County was found infested during February. (PPC, So.Reg. Feb. Rpt.).

A BEETLE (Colaspis sp.) - ARKANSAS - Number of overwintering larvae in lespedeza appears lower than the past two years in northeastern area. This pest damaged soybean seedlings in this area in 1959, with some fields suffering economic damage. Of 13 soybean fields planted in 1959, that were checked, larvae were found in only 3 fields with less than one larva per square foot in soil examined. (Boyer).

FRUIT INSECTS

GREEN PEACH APHID (Myzus persicae) - NEW MEXICO - Peach trees in southern counties often infested. (N. M. Coop. Rpt.). COLORADO - Egg hatch well underway in Mesa, Delta, Montrose and Garfield Counties. (Colo. Ins. Sur.). UTAH - Some present on apples at Santa Clara and Hurricane, Washington County. (Knowlton).

ROSY APPLE APHID (Anuraphis roseus) - UTAH - Curling apple leaves at Santa Clara and Hurricane, Washington County. (Knowlton).

APPLE APHID (Aphis pomi) - WASHINGTON - Hatched nymphs feeding on young apple leaves in Wenatchee area. (Hoyt).

COWPEA APHID (Aphis medicaginis) - NEW MEXICO - Light, spotty infestations on apple trees in Dona Ana County. (N. M. Coop. Rpt.).

A MITE (Tetranychus mcdanieli) - WASHINGTON - Large numbers in apple tree tops feeding on exposed foliage. (Hoyt).

PEAR PSYLLA (Psylla pyricola) - WASHINGTON - Adults abundant and active in many orchards in Wenatchee area. Eggs already deposited on twigs and buds. (Burts).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - TEXAS - Medium infestations noted in plum and peach orchards in the east and central areas of the State. (King).

PEACH TWIG BORER (Anarsia lineatella) - UTAH - Causing unusually severe damage to young peach plantings at Santa Clara. Damage conspicuous to peach trees at Santa Clara, St. George, La Verkin, Hurricane and Ivins, Washington County. (Knowlton).

A FLATHEADED BORER (Chrysobothris sp.) - CALIFORNIA - Heavy infestations in peach, plum and cotoneaster in Willows, Glenn County. (Cal. Coop. Rpt.).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Although a few groves at Citrus Heights are heavily infested, Maricopa County citrus has generally lighter infestations than at same time in 1959. Petal fall is still 1-2 weeks away in most groves. (Ariz. Coop. Sur.).

FLOWER THRIPS (Frankliniella tritici) - ARIZONA - Populations very heavy in Maricopa County citrus. (Ariz. Coop. Sur.).

LEAF ROLLERS (Amorbia spp.) - CALIFORNIA - Light infestation of A. essigana on Meyer lemon in Atherton, and light infestation of A. cuneana on citrus in Palo Alto, San Mateo County. (Cal. Coop. Rpt.).

A GEOMETRID (Sabulodes caberata) - CALIFORNIA - Light populations on Meyer lemon in Redwood City, San Mateo County. (Cal. Coop. Rpt.).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - A rather extensive infestation was discovered during February southwest of Allende, Nuevo Leon, near the National Highway. All available inspection crews in East Mexico were moved into the area to assist in delimiting the infestation. At the close of February, the delimitation at Allende was not complete. As crews advanced from the focal point of infestation, fewer and lighter infested trees were being found. During inspection, infested leaves were removed from the trees and burned. Spraying of the infested area is in progress. Survey crews working in the chemical control and free zones of the States of Tamaulipas, Nuevo Leon and Baja California, inspected 62,504 trees on 1,217 properties and found 1,246 infested trees on 43 properties. The infested properties were as follows: 3 with 24 trees at Linares, Nuevo Leon; 37 with 1,217 trees at Allende, Nuevo Leon; 3 with 5 trees in Hidalgo, Tampaulipas.

The properties in Hidalgo were defoliated of infested leaves and put under observation. Inspections in Tijuana and Ensenada, Baja California; Hermosillo, Sonora; Valle Hermoso and Camargo, Tampaulipas; and Villa de Santiago, Montemorelos and Gral. Teran, Nuevo Leon, were negative. Spray treatments were applied in Nuevo Leon and Sonora during February. (PPC, Mex. Reg.).

MEXICAN FRUIT FLY (Anastrepha ludens) - CALIFORNIA - Trapping operations continued during February in San Diego and Imperial Counties, with negative results, as were larval examinations on fruits in San Diego County. ARIZONA - Trapping operations in Santa Cruz and Yuma Counties were negative. (PPC, West. Reg., Feb. Rpt.). TEXAS - Effective February 2, Starr County was placed under State regulation. Two additional positive specimens were trapped in Starr County on February 5. Inspections in groves in the lower Rio Grande Valley, where A. ludens has been trapped for the presence of larvae, were negative through February. (PPC, So. Reg., Feb.Rpt.). MEXICO - Trapping operations continued in the same locations in Baja California and Sonora during February, with negative results. (PPC, Mex. Reg.).

PAPAYA FRUIT FLY (Toxotrypana curvicauda) - TEXAS - One female trapped in Cameron County on February 18. This is the first finding of this species in Texas for many years. The insect was frequently trapped in the Rio Grande Valley in the early days of the trapping program. (PPC, So. Reg., Feb. Rpt.).

TRUCK CROP INSECTS

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Infestations heavier and earlier than normal in lettuce and other crops. At Aguila in northwest Maricopa County, 100 percent of lettuce is infested in some fields, with 1-4 larvae per head. (Ariz. Coop. Sur.).

A THRIPS - ARIZONA - An unspecified species averaged 10 per head in some central area lettuce fields. (Ariz. Coop. Sur.).

CABBAGE APHID (Brevicoryne brassicae) - NEW MEXICO - Occasional infestations, probably this species, found in fields of cabbage in Dona Ana County. Mostly winged forms present. (N. M. Coop. Rpt.).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - Adults present and active on turnips in northern Sussex County. (Burbutis, Mason).

FLEA BEETLES - NEW MEXICO - Moderately heavy infestations of undetermined species damaging cabbage in northern Dona Ana County. (N. M. Coop. Rpt.).

ASPARAGUS BEETLES (Crioceris asparagi and C. duodecimpunctata) - NEW JERSEY - A survey was conducted in December and January to determine the number of overwintering populations that were present in the major asparagus-producing counties. The survey revealed that populations are at the lowest level in the period of survey (1957-60). It appears that beetles should be less of a problem in 1960 than for the past 3 years. A comparison of the number of hibernating beetles this winter, compared with 1959, shows a decrease in all counties surveyed for total number of beetles. C. asparagi makes up the vast majority of the population. The average counts per field, statewide, for C. asparagi compared with the 3 previous years as are as follows: 1957 - 53.3; 1958 - 4.1; 1959 - 27.8; 1960 - 3.7. (Ins.-Dis. Newsl.).

MEXICAN BEAN BEETLE (Epilachna varivestis) - NEW JERSEY - A survey was conducted in February to determine the number of hibernating beetles in the upper layer of duff on the soil in pine or mixed deciduous woodlands within one-quarter of a mile from fields that had been planted in beans during the past growing season. Beetles were difficult to find in the survey; apparently populations were very low. A moderate number of beetles were present in bean fields in 1959 but damage was not heavy. With apparently fewer overwintering beetles in the woodland areas, 1960 populations will probably be low. Of a total 18 sites examined in Cumberland, Cape May and Salem Counties and of 413 square yards of duff examined in these counties, the total number of beetles found in 1959-60 survey was 3, compared with 11 in 1958-59. Beetles were found at 2 locations in 1959-60 and 7 locations in 1958-59. (Ins.-Dis. Newsl.).

POTATO APHID (Macrosiphum solanifolii) - NEW JERSEY - A survey to determine the number of overwintering potato aphid eggs that are present on swamp rose, Rosa palustris, was conducted in the State during February and March. Overwintering eggs were found less numerous, generally, this spring than they were in 1957, 1958 or 1959. The most eggs were found along Racoon Creek in Gloucester County. Eggs were less numerous in the Cumberland-Salem County area than in previous years, and very few eggs were found in the central area of the State. Based on the survey, the infestation potential for potato aphids is lower than in any previous year. However, weather conditions in early spring may affect the development of populations. Cooler, wet weather is generally favorable to high populations. (Ins.-Dis. Newsl.).

APHIDS - OKLAHOMA - Unspecified species medium on young tomato and pepper plants in Tulsa. (Stiles). Ranged light to heavy on young pepper plants in flats checked in the south central area. (Vinson). CALIFORNIA - Myzus solani and M. persicae occurring as a heavy infestation on beans in National City and heavy on tomatoes in Otay, San Diego County. (Cal. Coop. Rpt.).

POTATO PSYLLID (Paratrioza cockerelli) - TEXAS - Damaging infestation of nymphs present on potatoes and tomatoes in lower Rio Grande Valley. Control measures being applied. (Deer).

GREEN PEACH APHID (Myzus persicae) - NEVADA - Heavy infestation on sugar beets in Logandale, Clark County. (Zoller).

BEET LEAFHOPPER (Circulifer tenellus) - UTAH - Four specimens collected in 50 square feet of area in the Yost-Snowville area of Box Elder County. (Thornley, March 20-26).

LYGUS BUGS (Lygus spp.) - WASHINGTON - Adults moving onto truck gardens at Walla Walla, Walla Walla County. Some damage to young spinach plants. Sudden cool, wet weather has slowed down activity of these bugs. (Hanna).

MUSHROOM MITE (Tyrophagus lintneri) - CALIFORNIA - Heavy populations of this species and Rhizoglyphus sp. occurring on garlic in King City, Monterey County. (Cal. Coop. Rpt.).

COTTON INSECTS

Pests of Cotton in the lower Rio Grande Valley of Texas - SEED-CORN MAGGOT (Hylemya cilicrura) damaged 2 fields of cotton in Willacy County. An unknown species of CUTWORM caused some damage to cotton fields, with greatest damage occurring in those fields that had vegetation present during the winter. Unspecified species of APHIDS, SPIDER MITES and DARKLING BEETLES were reported in some of the older cotton. (Deer).

PINK BOLLWORM (Pectinophora gossypiella) - FLORIDA - Collected on wild cotton in Lower Matecumbe, Monroe County, on March 22. Det. R.A. Newkirk. (Creamer).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

GYPSY MOTH (Porthetria dispar) - NEW YORK - In the upstate areas, no new infestations were found as of the end of February in counties adjoining the States of New Jersey and Pennsylvania. However, several additional small infestations were located at the periphery of the regulated area in Otsego and Herkimer Counties. Two of the 3 sites where moths were trapped last summer in Westchester County have been negatively scouted. On Long Island, 4 scattered new egg masses were found in Southampton, 3 scattered new egg masses were found in Brookhaven and 2 new egg masses were found on a cemetery tree in Riverhead. The nature of the infestation in Suffolk County tends to indicate a wide distribution of very light and new infestation. NEW JERSEY - Scouting activities in Montague and Morristown areas continued, with negative results during February. PENNSYLVANIA - Scouting in Perry County has been negative. VERMONT - Surveys in western portions of Rutland and Addison Counties revealed widespread distribution and apparent buildup. At one site, there were an estimated 3,000 egg clusters per tree. Infestation in Chittenden County was light to medium at 8 locations surveyed. NEW HAMPSHIRE - Considerable defoliation may be expected in several sections; namely Merrimack, Rockingham, Hillsboro and Cheshire Counties. MAINE - Infestation is building up, with extensive defoliation expected in York and Cumberland Counties. MASSACHUSETTS - Infestations are building up both in area and intensity. Heaviest areas of infestation appear to be on Cape Cod near Barnstable and Truro and in the central area near Methuen and Haverhill. CONNECTICUT - Infestations appear to be building up in both area and intensity. The State has recommended that approximately 41,000 acres of land be treated. Heaviest known areas of infestation are in the vicinity of Windsor, Middletown, New Haven, Naugatuck and Waterbury. (PPC, East. Reg., Feb. Rpt.).

CARPENTERWORM (Prionoxystus robiniae) - CALIFORNIA - Medium infestation of larvae present in bark of oak trees in Santa Barbara, Santa Barbara County. (Cal. Coop. Rpt.).

GREAT BASIN TENT CATERPILLAR (Malacosoma fragile) - UTAH - Larvae infesting some native shrubs along the Virgin River from Springdale to Hurricane. (Knowlton).

SPRING CANKERWORM (Paleacrita vernata) - MISSOURI - Adults observed at lights in Columbia, Boone County, on March 27. (Stone). KANSAS - A total of 119 males collected in the light trap at Manhattan, Riley County, during period March 28-31. (Peters).

A BUPRESTID (Chrysobothris floricola) - PENNSYLVANIA - Collected from a Scotch pine stump in Perry County during March. Det. D. M. Weisman. (Drooz).

APHIDS (Cinara spp.) - OKLAHOMA - Cinara sp. heavy on arborvitae in a nursery sales yard in the southwest area. (Hatfield). CALIFORNIA - Heavy populations of C. curvipes on fir in Nevada City, Nevada County. (Cal. Coop. Rpt.).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - PENNSYLVANIA - Very heavy infestation present on willow in McKean County, March 31. (Adams).

EUONYMUS SCALE (Unaspis euonymi) - MARYLAND - Heavy on euonymus at Eastport, Anne Arundel County, March 21. (U. Md., Ent. Dept.). OKLAHOMA - Heavy on some euonymus plants checked in Tulsa. (Stiles).

A SCALE INSECT (Aspidiotus degeneratus) - CALIFORNIA - Medium populations present on camellia in Porterville, Tulare County. (Cal. Coop. Rpt.).

Scale Insects in California - The pests tabulated below occurred on tropical plants in a nursery property in Los Angeles County, and as they are not known to be established in the State, all are subject to eradication treatment. (Cal. Coop. Rpt.).

Species	Host	Infestation
Asterolecanium epidendri	Vriesia sp.	Heavy
Chrysomphalus albopictus	Tillandsia sp.	Light
Chrysomphalus sphaerioides	Chamaedora sp.	Medium
Diaspis n. sp.	Tillandsia sp.	--
Dinaspis aculeata	Billbergia sp.) Tillandsia sp.)	Light
Ischnaspis longirostris	Vriesia sp.	Light
Lepidosaphes dentata	Agave sp.	Medium
Mesolecanium sp.	Tillandsia sp.	--
Pinnaspis strachani	Vriesia sp.	Medium

A SPIDER MITE (Oligonychus sp.) - NORTH CAROLINA - Severe local infestation on camellia in Rowan County. (Pl. Dis. Clin., Farrier).

INSECTS AFFECTING MAN AND ANIMALS

FACE FLY (Musca autumnalis) - OHIO - Large numbers observed in a farm home on March 30 in Holmes County. Living and dead flies were abundant in all rooms of the house, with largest numbers in the attic. Several hundred flies were present on each attic window. Flies were also present on the outside wall of the home. (Holdsworth).

COMMON CATTLE GRUB (Hypoderma lineatum) - NORTH CAROLINA - Present in beef steers in Rowan County on February 11. Det. by C. W. Sabrosky. (Jones). OKLAHOMA - Heavy (8 per animal) on one out of 8 animals checked in the Madill area of Marshall County. (Vinson).

CATTLE LICE - OKLAHOMA - Unspecified species heavy on 5 of 8 cows checked in the Madill area. (Vinson). UTAH - Unspecified species conspicuous in some cattle herds in the Kanab-Glendale area of Kane County and several thousand cattle sprayed in Washington County for control of these pests. Infesting cattle in several other counties as well. (Knowlton).

MOSQUITOES - COLORADO - Third-instar larvae of Aedes dorsalis present in Larimer County, March 25. (Colo. Ins. Sur.).

BED BUG (Cimex lectularius) - NEVADA - Medium infestation in a home in Las Vegas, Clark County. (Williams).

STORED-PRODUCT INSECTS

KHAPRA BEETLE (Trogoderma granarium) - MEXICO - Inspections were made in the States of Baja California, Jalisco, Sonora, Mexico, Mexico D. F., Chihuahua and Durango. All determinations were negative. (PPC, Mex. Reg., Feb. Rpt.). CALIFORNIA - This species and T. parabile in a mixed population in eggplant seed in Thermal, Riverside County. (Cal. Coop. Rpt.).

A DERMESTID (Perimegatoma vespulae) - MINNESOTA - An infestation was found in stored small grain in an elevator in Duluth on February 3. (Minn. Ins. Rpt.).

VARIED CARPET BEETLE (Anthrenus verbasci) - DELAWARE - Larvae present in feed mill in southern Sussex County. Collected by E. O. Stockbridge. (Burbutis, Mason).

INDIAN-MEAL MOTH (Plodia interpunctella) - DELAWARE - Adults present in a seed cleaning plant and warehouse in southern Sussex County. Collected by E. O. Stockbridge. (Burbutis, Mason).

BENEFICIAL INSECTS

LADY BEETLES - ARIZONA - Counts in central area alfalfa fields, primarily Hippodamia convergens, averaged 8 larvae and 12 adults per 10 sweeps. (Ariz. Coop. Sur.). OKLAHOMA - Only occasional to light numbers of H. convergens reported in fields surveyed throughout the State. None noted in most fields checked. (Okla. Coop. Econ. Ins. Sur.).

A MELYRID (Malachius sp.) - DELAWARE - Larvae found in corn stalks and in a dead alfalfa stem in New Castle and Kent Counties. (Burbutis, Mason).

MISCELLANEOUS INSECTS

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - LOUISIANA - Found in Red River Parish for the first time during February. TEXAS - Surveys have revealed 434,988 acres of new infestations in counties under regulation. All known infestations have been treated in San Antonio. (PPC, So. Reg., Feb. Rpt.).

LARGER YELLOW ANT (Lasius interjectus) - MARYLAND - Winged and none-winged forms noted in basements of homes in Montgomery, Prince Georges and Anne Arundel Counties. (U. Md., Ent. Dept.).

CARPENTER ANTS (Camponotus spp.) - PENNSYLVANIA - Winged forms of unspecified species present around homes in Clinton County, March 31. (Gesell). MARYLAND - C. pennsylvanicus present in a house at Silver Spring, Montgomery County, on March 29. (U. Md., Ent. Dept.).

AN ANT (Acanthomyops sp.) - NORTH CAROLINA - Adults flying in Caldwell and Granville Counties. (Culp, Chamberlain, Farrier).

CARPET BEETLES - MARYLAND - Adults and larvae of Anthrenus flavipes noted in homes in Charles, Montgomery and Prince Georges Counties, on April 1. Larvae of Attagenus piceus were noted in a home at Linthicum Heights, Anne Arundel County, on March 21. (U. Md., Ent. Dept.). NORTH CAROLINA - Adults of an undetermined species in wool rugs in a house and larvae causing severe damage to a wool sofa in another house; both in Forsyth County. (Wright).

A DERMESTID (Thylodrias contractus) - DELAWARE - A moderate infestation found in one home and present in another home in New Castle County. (Burbutis, Mason).

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - OHIO - First swarming in Wooster, Wayne County, noted on March 29, when temperature reached 71° F. (Rings). MARYLAND - Swarming of reproductive forms common in south central sections of the State on April 1. (U. Md., Ent. Dept.). NORTH CAROLINA - In flight in Caldwell and Warren Counties. (Culp, Reams, Farrier). MISSOURI - Swarming in a house in Fredericktown, Madison County. (Stone).

TERMITES - PENNSYLVANIA - Swarming of unspecified species was more common than usual in Clinton County during late March. (Gesell).

A STONEFLY (Allocapnia vivipara) - PENNSYLVANIA - Very abundant on outside of home in Greene County, March 2. Det. H. H. Ross. (Udine).

BOXELDER BUG (Leptocoris trivittatus) - PENNSYLVANIA - Migrating over the side of a house in Centre County on March 25. (Adams). MARYLAND - Causing a nuisance by entering homes in Baltimore, Montgomery and Prince Georges County. (U. Md., Ent. Dept.).

BROWN-BANDED ROACH (Supella supellectilium) - PENNSYLVANIA - Heavy infestation present in a home in Delaware County, March 19. (Menusan). MARYLAND - Infestation present in home in Rockville, Montgomery County, March 28. (U. Md., Ent. Dept.).

COLLEMBOLA - PENNSYLVANIA - Achorutes nivicola numerous throughout Lycoming County on March 30. (Gesell). This species also very abundant in Blair County on this same date and was getting into the water supply. The species has been present in this area for the past 3 weeks. (Udine). CALIFORNIA - Medium infestation of Entomobrya unostrigata occurring as a nuisance in a home in Lodi, San Joaquin County. (Cal. Coop. Rpt.).

CLOVER MITE (Bryobia praetiosa complex) - NEVADA - Invading homes in Reno-Sparks area, Washoe County. (Lauderdale). DELAWARE - Large numbers invading houses in New Castle County, particularly where lawns are relatively new. (Burbutis, Mason). NORTH CAROLINA - Large numbers invading a house in Wake County. (Jones, Farrier). WASHINGTON - Entering homes at Union Gap, Yakima County. (Landis).

AN EARTHWORM MITE (Fuscuropoda agitans) - CALIFORNIA - Heavy populations occurring in earthworm beds in Napa, Napa County. (Cal. Coop. Rpt.).

CORRECTIONS

CEIR 10(13):214 - Note under elm leaf beetle (Galerucella xanthomelaena) from Nevada should read - "This is the second record for Mineral County, the species being previously recorded from Schurz."

CEIR 10(14):239 - CLUSTER FLY (Pollinia rudis) should read (Pollenia rudis).

ADDITIONAL NOTES

IDAHO - CUTWORMS (Agrotis sp.) are infesting over 15,000 acres in the reseeded area and cheatgrass areas in the Saylor Creek district south of Glenns Ferry. At specific points checked, populations were running 3-5 larvae per square foot. Scattered larvae, believed to be the same species, were also noted infesting range areas in the Raft River Valley. (Evans, Gibson). EUROPEAN EARWIG (Forficula auricularia) overwintering adults now active in the Moscow area. (Portman, Gittins). NORWAY-MAPLE APHID (Periphyllus lyropictus) overwintering eggs hatching on trees in Moscow. (Manis).

LIGHT TRAP COLLECTIONS

	Pseud. unip.	Agrot. ips.	Feltia subterr.	Prod. ornith.	Perid. marg.	Helio. zea
ARIZONA						
Mesa 3/21-27				10	6	1
ARKANSAS						
Fayetteville 4/1		2				
Kelso 4/1		1			1	
FLORIDA						
Homestead 3/22			9	7		
MISSISSIPPI						
*Stoneville 3/25-31	11	5	4	6	11	
SOUTH CAROLINA						
Clemson 3/26-4/1	1	1		41		
Charleston 3/28-4/3	11	11	7	5	1	
TEXAS						
Brownsville-Progresse 3/21-25	25	20				7

---

* Two traps - Stoneville

INTERCEPTIONS OF SPECIAL INTEREST AT U. S. PORTS OF ENTRY

(1959 records unless otherwise indicated)

Larva of ASIATIC RICE BORER (*Chilo suppressalis* (Wlk.)) in rice straw in baggage of an automobile tourist from Mexico (the host material and insect were possibly of Japanese origin) on November 29 at San Ysidro, California; an adult of *Tryphetus incarnatus* (Gyll.) (a weevil of importance to legume tree seeds in Indonesia) in unidentified seed in baggage from Burma on September 26 at New York, New York; an adult LYGAEID (*Blissus* sp., possibly n. sp.) in tomato cargo from Mexico on January 13 at Nogales, Arizona; larvae of *Agriotes obscurus* (L.), *Agriotes* sp., near *mancus* (Say) and *Ctenicera* sp., probably *aeneus* (L.) (all wireworm species of economic importance in many European localities) in soil around roots of plants; larva of *Petrora resinella* (L.) (a pine gall-forming species of economic importance in Europe) on *Pinus sylvestris*, in cargo from USSR on December 19, 23 and 30 at Washington, D. C.; an economic SNAIL (*Helicella caperata* (Montagu)) (of Western Europe and South Australia) on cut flowers in mail from France destined for California on May 22 at New York, New York; a GRAPE WHITEFLY (*Aleurolobus taonabae* Kuwana) (of some economic significance in Japan) on *Vitis* leaves in mail from Japan on July 20 at Washington, D. C.; a CHERMID (*Pineus harukawai* Inouye) (probably an important species but not known to occur in the U. S.) on *Pinus pentaphylla* in cargo from Japan on May 15 at Seattle, Washington; an adult and larvae of a European WIREWORM (*Agriotes* sp.) in soil around cyclamen bulbs in baggage from Italy on November 18 at New York, New York; CITRUS BLACKFLY (*Aleurocanthus woglumi* Ashby) 5 times on citrus leaves from Mexico, at Nogales (Arizona) (1) destined for California, El Paso (Texas) (2), Laredo (Texas) (1) and Brownsville (Texas) (1); KHAPRA BEETLE (*Trogoderma granarium* Everts) 6 times at Charleston (South Carolina) in cargo of crude guar gum (1), at Wilmington in cargo of crushed myrobalan nuts (1), and in stores once each at Portland (Washington), Baton Rouge (Louisiana), New Orleans (Louisiana) and Houston (Texas); larvae of a POTATO WEEVIL (*Premnotrypes* sp.) twice in potatoes in baggage from Colombia on January 4 and 11, respectively, at Miami, Florida; WHITE GARDEN SNAIL (*Theba pisana* (Muller)) 6 times, at Charleston (South Carolina) (1), at New Orleans (Louisiana) (1), at Norfolk (Virginia) (1) and New York (New York) (2) on military cargo and once in baggage at New York (New York), all from the Mediterranean area; larva of a FRUIT FLY (*Anastrepha* sp.) in palm nut in baggage from Guatemala on November 28 at New Orleans, Louisiana; larvae of MEDITERRANEAN FRUIT FLY (*Ceratitis capitata* (Wied.)) 18 times, at Boston (Massachusetts) in fruits in baggage (10), at Baltimore (Maryland) (1),in stores, and New York (New York) in baggage (6) and stores (1); larvae of DURRA STALK BORER (*Sesamia cretica* (Led.)) in cargo of Italian broomcorn destined for Cuba at Charleston, South Carolina, on November 9; and larvae of EGGPLANT FRUIT BORER (*Leucinodes orbonalis* Guen.) in *Solanum* fruits in baggage from Liberia on July 14 at New York, New York. (Plant Quarantine Division, January 31).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES [1]

1959

CEREAL AND FORAGE INSECTS

Alfalfa, Clover and Vetch Insects: Several lepidopterous species caused varying degrees of damage to alfalfa, clover and vetch in several of the states. Infestations and damage ranged from very light, or noneconomic, to severe, depending upon the species involved and the area in which infestation occurred.

ALFALFA CATERPILLAR (Colias philodice eurytheme) was first found on alfalfa in Sussex County, Delaware, by mid-April, being present in all areas of the State by late May. Highest infestations occurred from late August to October, but were never serious. Larvae also fed on clover, but to a very limited extent. Alfalfa caterpillar numbers were unusually abundant during late summer in the southern third of Indiana. Larvae appeared in South Dakota alfalfa fields the last of May, but populations remained low throughout the season.

Most alfalfa fields in Nebraska had light infestations of alfalfa caterpillar, with adults numerous in some southeast area fields during late July, but less than three larvae per ten sweeps. The species was common in alfalfa fields over Oklahoma during the growing season but was only of minor importance. Infestations in Arkansas remained low, generally.

Alfalfa caterpillar caused light injury to alfalfa locally in a few Utah counties, and the pest caused light losses to alfalfa in Colorado. This species was generally light in New Mexico alfalfa throughout the summer until the last two weeks of September, when populations became abundant. Larvae averaged 1-6 per sweep in fields of alfalfa in southwestern counties. Light infestations of alfalfa caterpillar were general in California on alfalfa plantings during 1959.

The ALFALFA LOOPER (Autographa californica) population in Utah was low, and a light infestation of red clover in the Columbia Basin of Washington was 20 percent infested with a granulosis virus by mid-June. The first alfalfa looper moth flight in Oregon reached a peak April 28 in the northwestern area and the first moths of the second brood appeared June 26. Infestations in the Milton-Freewater area were much less than those of 1958.

ALFALFA WEBWORM (Loxostege commixtalis) was present in most areas of Delaware, but infestations were generally very low. Moderate populations in east central and south central Nebraska during late summer caused minor injury to alfalfa; counts averaged less than 6 per 10 sweeps. Moderate to severe infestations of BEET WEBWORM (Loxostege sticticalis) occurred over a wide area of North Dakota, causing injury to alfalfa.

GARDEN WEBWORM (Loxostege similalis) was abundant in some Illinois fields of alfalfa in late season, especially in west-southwest and southwest sections, with many fields being treated; and the insect was unusually abundant in legumes in the southern third of Indiana during late summer. Garden webworm numbers were down considerably from 1958 in Missouri and no economic populations appeared until late summer, when a few scattered fall-seeded fields of alfalfa were damaged. Infestations in Arkansas remained low, generally. Moderately heavy garden webworm infestations caused minor damage to alfalfa near Hondo (Lincoln County) and Lovington (Lea County), New Mexico.

---

[1] Including all reporting states except Hawaii and Alaska, which were carried in CEIR 10(4):46 and CEIR 10(6):74, respectively.

Unspecified species of *Loxostege* injured new alfalfa seedlings in the central area and on the Eastern Shore of Maryland during September; began building up in fields of alfalfa across Oklahoma during June, causing most concern in the south central area during July and August; but were noneconomic in Kansas during 1959.

CUTWORMS caused some economic damage to alfalfa, clover and vetch in several Plains and Western States, as well as in a few Eastern States. One species was trapped in Florida for the first time. ARMY CUTWORM (*Chorizagrotis auxiliaris*) damaged alfalfa in a few areas of Kansas and caused economic damage to vetch in Texas, although infestations in Texas were not as heavy as in past years. Damage to alfalfa in Wyoming was minor and losses to this crop were light in Colorado, while much less alfalfa was damaged in Utah in the spring than normal. This was the most common species of cutworm in Wyoming as determined by a spring survey.

BLACK CUTWORM (*Agrotis ipsilon*)* damaged seedling alfalfa and clover in central and northern New Jersey and injured old and new alfalfa stands in central Maryland during late summer. Infestations were not as heavy in vetch in Texas as in past years, but did cause economic damage.

Larval infestations of VARIEGATED CUTWORM (*Peridroma margaritosa*) were heavy (1-15 larvae per square foot) in early May in alfalfa and red clover in extreme southeastern Missouri, with severe damage to alfalfa. Infestations were light in central and north central areas of the State. In Texas, infestations were not as heavy in vetch as in past years, but some economic damage did occur. Small numbers of variegated cutworm were found throughout Illinois on clover and alfalfa, with no apparent damage; but there was local damage to alfalfa in Utah by this pest. Variegated cutworm populations in Kansas were much reduced from the high populations present in 1958, with very little damage during 1959.

SPOTTED CUTWORM (*Amathes c-nigrum*) larvae were prevalent on clover and alfalfa during late March in Kent and Sussex Counties, Delaware. Specimens of spotted cutworm taken at a light trap in Alachua County, Florida, May 13, 1958, and determined in 1959, constitute a new State record for Florida.

An undetermined species of CUTWORM damaged young alfalfa plantings in Hidalgo and Luna Counties, New Mexico, during February. Counts of several species of cutworms varied 0-4 per square foot on clover and alfalfa in Illinois during April and May, but apparently did not cause much damage; however, various cutworm species were of importance on several cereal and forage crops in Virginia.

ARMYWORM (*Pseudaletia unipuncta*) infestations in vetch in Texas were not as heavy as in past years, but did cause economic damage. FALL ARMYWORM (*Laphygma frugiperda*) damaged seedling alfalfa and clover in central and northern New Jersey, and outbreaks occurred on alfalfa in several Virginia counties.

YELLOW-STRIPED ARMYWORM (*Prodenia ornithogalli*) was present on alfalfa statewide in Delaware during the season, with larvae becoming abundant in fields of alfalfa in New Castle County in late August and September. Outbreaks of this species occurred in several areas of southern Pennsylvania, with some controls required to prevent severe crop losses. Some alfalfa in Utah was damaged by both yellow-striped armyworm and WESTERN YELLOW-STRIPED ARMYWORM (*Prodenia praefica*). Unspecified armyworms required considerable control work in forage and seed crops in local areas of California.

Adults of a CLOVER BUD CATERPILLAR (*Grapholitha conversana*) appeared in early May in Latah County, Idaho, and numbers increased through mid-May, with population counts of 1-10 per sweep in an area from Kootenai County south through Idaho County. However, little larval feeding damage was reported. Larvae of CLOVER HEAD CATERPILLAR (*Grapholitha interstinctana*) fed in central buds and crowns of new clover seedlings in Illinois in June, killing up to 20 percent of the seedlings in some fields. In Indiana, clover head caterpillar was again abundant on southeastern area red clover, particularly in Decatur, Rush and Shelby Counties; and CLOVER LOOPER (*Caenurgina crassiuscula*) was unusually abundant on legumes in late summer in the southern third of Indiana. Infestations of CABBAGE LOOPER (*Trichoplusia ni*) in alfalfa were fairly common in Delaware during 1959, particularly in Sussex County during September and October.

---

* Zimmerman, E. C., 1958. Insects of Hawaii, Vol. 7:253.

Larvae of CORN EARWORM (*Heliothis zea*) were abundant in alfalfa during September and October in most areas of Delaware, but highest in New Castle County. The species also damaged seedling alfalfa and clover in northern and central New Jersey. Larvae of this pest were unusually abundant on legumes during late summer in the southern third of Indiana, but infestations were generally low on alfalfa in Arkansas. Corn earworm attacked alfalfa in Kansas to a small degree; and populations of this pest built up in alfalfa in Oklahoma during mid-May, continuing until fall with no noticeable increase in damage over that of 1958. Heavy infestations of corn earworm damaged alfalfa in Chaves and Eddy Counties, New Mexico.

Corn earworm was present on alfalfa in Georgia in late season. Counts of this species ranged 45-380 per 100 sweeps on crimson clover in northern Louisiana and heavy infestations were observed on this crop in West Feliciana Parish and on white clover in Pointe Coupee Parish.

Counts of GREEN CLOVERWORM (*Plathypena scabra*) larvae ranged 0-80 per 100 sweeps in clover and alfalfa in Illinois in late August and early September, when as many as 1,020 per 100 sweeps were found in the west-southwest section of the State. The species was also unusually abundant in legumes in the southern third of Indiana during late summer. Green cloverworm infestations remained low in alfalfa in Arkansas and the species was only of minor importance in Oklahoma, though common in fields of alfalfa over that State during the season. Surveys in Nebraska in late August showed slight increases of green cloverworm over those of 1958 on alfalfa; highest count was 4 per 10 sweeps in the east central area. Green cloverworm appeared in mid-May on alfalfa and clover over most of Delaware, not becoming common until mid and late July. Infestations increased rapidly and during most of August, September and October larval populations on these crops in Delaware were fairly abundant.

A PYRAUSTID (*Nomophila noctuella*) severely damaged seedling alfalfa and clover in central and northern areas of New Jersey and was injurious to new alfalfa seedlings in the central and Eastern Shore areas of Maryland during September. Moths of this pyraustid were unusually abundant early in the season in Ohio and, for the first time in the State, larvae caused important damage to summer-seeded alfalfa in five northeastern counties. The seedlings made rapid recovery after treatment. Larvae collected from fields of alfalfa were highly parasitized and, as a result, the species may be unimportant again in Ohio in 1960.

A TORTRICID (*Tortrix pallorana*) was abundant on alfalfa and clover in parts of New Castle and Kent Counties, Delaware, during late April and May, and again in July on clover. This tortricid caused only slight local seed-crop injury to alfalfa in Utah. Larvae of VELVETBEAN CATERPILLAR (*Anticarsia gemmatalis*) were first found on alfalfa September 25 in Delaware, which is one of the earliest dates this species has been found in the State. Larvae were common on alfalfa during October over the State. The species was found on alfalfa in Georgia late in the season.

A larval complex, including variegated cutworm, armyworm and corn earworm, built up large populations on seed clover at Simmesport, Louisiana. Larvae ranged 20-40 per square foot of sod. Early larval infestations in clover began to disappear by mid-May and the infestations usually found in alfalfa did not materialize in 1959.

Of the APHIDS that infested forage crops during 1959, PEA APHID (Macrosiphum pisi) and SPOTTED ALFALFA APHID (Therioaphis maculata) were the most serious. Populations of pea aphid were heavy in several western states, being the heaviest encountered in Nevada in recent years; infestations were also damaging in some plains states, being more so in Kansas than has been noted since 1934; and numbers were heavy in a few eastern states, as was the case in Delaware in early June. Spotted alfalfa aphid was found for the first time in two years in Indiana during 1959, while economic numbers developed in Kansas only in a few localized areas. Heavy infestations of this aphid severely damaged alfalfa in several counties in New Mexico in March and April, and caused severe damage to this crop in Arizona during October. Spotted alfalfa aphid survived the winter statewide in Oklahoma, despite some severe winter weather; and infestations in Nevada were heavier than in 1958, but were generally below economic levels. This aphid was found in northern Oregon for the second consecutive year. Infestations in some areas of the Nation were controlled by weather or parasites and predators.

Pea aphid numbers on alfalfa hay were moderate to heavy in the Columbia Basin and the Yakima Valley of Washington by mid-July, with some treatments applied. This is the first time in 13 years populations of pea aphid have been great enough to cause reduction in seed yields in experimental plots at Prosser. A spring survey by the Aphid Control League revealed 12,000 acres of alfalfa in the Walla Walla area with an average infestations of 37 aphids per 100 tips, lower than normal. In Oregon, pea aphid population remained high in alfalfa fields throughout the season, especially in major alfalfa areas. Numbers in Klamath County in early June were estimated at several thousand per plant and actually killing young top growth in established fields. In mid-October, numbers again rose to an above-normal level in Oregon, after some decrease in early fall.

Outbreaks of pea aphid occurred in many southern areas of Idaho, with severe damage in numerous fields of alfalfa; counts of 10,000 per sweep were encountered in some southwestern fields. Considerable pea aphid damage was noted to third-cutting alfalfa in the southwest and damage was general to the third cutting in south central and southeastern areas of Idaho. Loss to alfalfa in the southern part of the State, including controls, was estimated at $1,950,000. Growth of first-cutting alfalfa in Wyoming was retarded by pea aphid infestations of over 10,000 per 100 sweeps in the southeast area, with an estimated loss of 25 percent. Numbers dropped markedly after this early outbreak and remained low throughout the season over most of the State. Losses due to pea aphid on alfalfa were generally light in Colorado.

Pea aphid was again more serious in Utah than spotted alfalfa aphid, causing substantial losses of forage alfalfa hay and reduced seed production in a number of areas. Many outbreaks developed in the spring and early summer and damage continued until fall. Pea aphid populations were the heaviest encountered in Nevada in recent years, with severe damage to many fields and plants stunted or apparently killed. Excessive amounts of honeydew and sticky hay were common in Nevada. In most cases where both were present, pea aphid outnumbered spotted alfalfa aphid 10-50 to one. In many fields in Nevada, predators were unable to cope with the pea aphid situation and control applications were necessary. Pea aphid was probably not as severe in many locations of California as in previous years. The pest was general over the State in all alfalfa-growing areas, with heavy local infestations occurring.

Pea aphid built up gradually in alfalfa during March in Arizona and was extremely heavy statewide during April, when infestation were heavier than normal for previous years. Infestations began declining rapidly during early May in Yuma County, in mid-May in the central part of Arizona and during late May in northeastern parts of the State. Heavy infestations of pea aphid in Roosevelt, Chaves, Eddy and Mora Counties, New Mexico, caused considerable damage to alfalfa; and abnormally heavy infestations destroyed many seedlings and established alfalfa stands in San Juan County during May and June. Many areas of New Mexico reported pea aphid populations building up again in the fall.

Pea aphid infestations in vetch and alfalfa in Texas were much less than in 1958. Infestations of this pest in alfalfa reached a peak during late April, May and early June in north central, central, south central and southeastern areas of Oklahoma. Populations dwindled gradually across the State during the summer and continued to be noneconomic the remainder of the year.

In Kansas, pea aphid caused more damage to alfalfa than has been noted in that State since 1934. The period of infestation lasted 6-8 weeks. Alfalfa stands appeared to have been 100 percent destroyed in many fields in the eastern half of the State; however, observations later in the season showed that plants in most fields made almost 100 percent recovery. In many fields in the State, a fungus disease eliminated pea aphid before chemical controls were applied.

Pea aphid infestations were generally light to moderate in Nebraska. Early-spring buildup was slow compared with past years. Peak infestations in central and eastern area alfalfa occurred during mid-July to mid-August, ranging 300-500 per 10 sweeps; however, most fields averaged 0-40 per 10 sweeps. In South Dakota, pea aphid appeared in fields of alfalfa the last week of April. Populations remained relatively low during 1959 and little damage was noted. Pea aphid counts in Wisconsin ranged from zero to over 140 per sweep by May 20 in fields of alfalfa in east central and southeastern counties.

Pea aphid was light on clover throughout Missouri in March. Cool temperatures in April resulted in a rapid buildup on red clover and alfalfa in the southwest, with counts of 20-300 per sweep on red clover and 5-200 on alfalfa. The buildup continued in early May in south central and southeast areas. Parasite and predator populations increased rapidly in southwest Missouri and 10-25 percent of aphids showed evidence of a fungus disease. Pea aphid populations continued high through mid-May in the southeast, with little evidence of damage. A buildup occurred in late October and early November in northeast Missouri, with counts of 5-125 per sweep. In Arkansas, pea aphid numbers fluctuated a great deal during the 1959 season.

Damaging numbers of pea aphid built up on clover and alfalfa in west-southwest sections of Illinois in early May, but the pest was of little importance at other times or in other sections of the State. Dissections in late April showed 70 percent of aphids parasitized in Urbana and parasites were abundant throughout northern areas of Illinois in early May. Pea aphid numbers remained at low levels in all fields observed in Ohio.

Pea aphid populations on alfalfa in Maryland were considerably above those of 1958 on first and second cuttings; many fields required treatments. Populations of this aphid in Delaware were very heavy on alfalfa in early June, with over 100 per sweep in Kent and Sussex Counties. Infestations were also abundant during late August and mid-October. Pea aphid caused very little damage in New Jersey during 1959. In Rhode Island, pea aphid populations built up early on alfalfa, but by mid-May it was evident that heavy parasitism had occurred. No serious infestations developed.

Heavy infestations of spotted alfalfa aphid severely damaged alfalfa in Chaves, Eddy, Dona Ana, Otero, Guadalupe, San Miguel and Grant Counties, New Mexico, during March and April. Infestations were much lighter during late summer and early fall, except for several heavy infestations which damaged young alfalfa stands in Chaves, Eddy, Torrance and Dona Ana Counties. Infestations of this aphid in alfalfa in Arizona peaked in April, July and October in central and southeastern areas of the State. Increases in April and July were light and of little significance, but were heavy in October and caused severe damage in many fields; chemical controls were also required during this period. Infestations increased about the same time in Yuma County, Arizona, but were not heavy enough to cause serious damage. Heavy rains in late October, combined with an aphid disease, helped reduce heavy infestations. Parasitism occurred to some degree in Arizona throughout the year and was partially responsible for holding down populations. Parasites, predators and fungus disease were all effective against spotted alfalfa aphid in California during 1959. In some locations of the State, early insecticide treatment averted later heavy infestations of this pest. Generally, light populations of spotted alfalfa aphid were more common than heavy populations.

The most serious damage to alfalfa by spotted alfalfa aphid in Utah during 1959 occurred over the southwestern third of the State, with most controls being applied in Washington, Iron, Beaver and Millard Counties. Loss of alfalfa hay, seed and new plantings in Utah for 1959 is estimated at $130,000, compared with an estimated $780,000 for 1955, $500,000 for 1956, $165,000 for 1957 and $178,000 for 1958. Movement northward through Box Elder and Cache Counties occurred during September. Spotted alfalfa aphid infested alfalfa in Colorado, but losses were generally light.

Infestations of spotted alfalfa aphid in Nevada were heavier during 1959 than in 1958, but populations were generally below economic levels because of the timely increase of parasites and predators in the southern and central sections of the State and of predators in the northern area. Peak populations occurred in Clark, Lincoln and Nye Counties in April and August. A heavy spotted alfalfa aphid infestation and damage occurred east of Sparks, Washoe County, the first week in April. Highest populations in Nevada occurred in Churchill, Douglas, Lyon, Pershing and Washoe Counties in June and in northern counties in July, except for a heavy infestation in northern Eureka County in late October. Periodic surveys during the summer in Nez Perce County, Idaho, failed to disclose the presence of spotted alfalfa aphid until October 15, when it was detected in the Waha and Lewiston areas. Numbers were fewer than those of 1958.

Spotted alfalfa aphid was found in northern Oregon for the second consecutive year, populating practically the identical areas as in 1958. Damage was apparently not severe. Its range in Oregon now includes Wheeler County as well as the four counties found infested in 1958. Spotted alfalfa aphid was first found in Washington in late September in spite of intermittent surveys until mid-July. Distribution was almost identical to that of 1958 in Benton, Walla Walla and Asotin Counties.

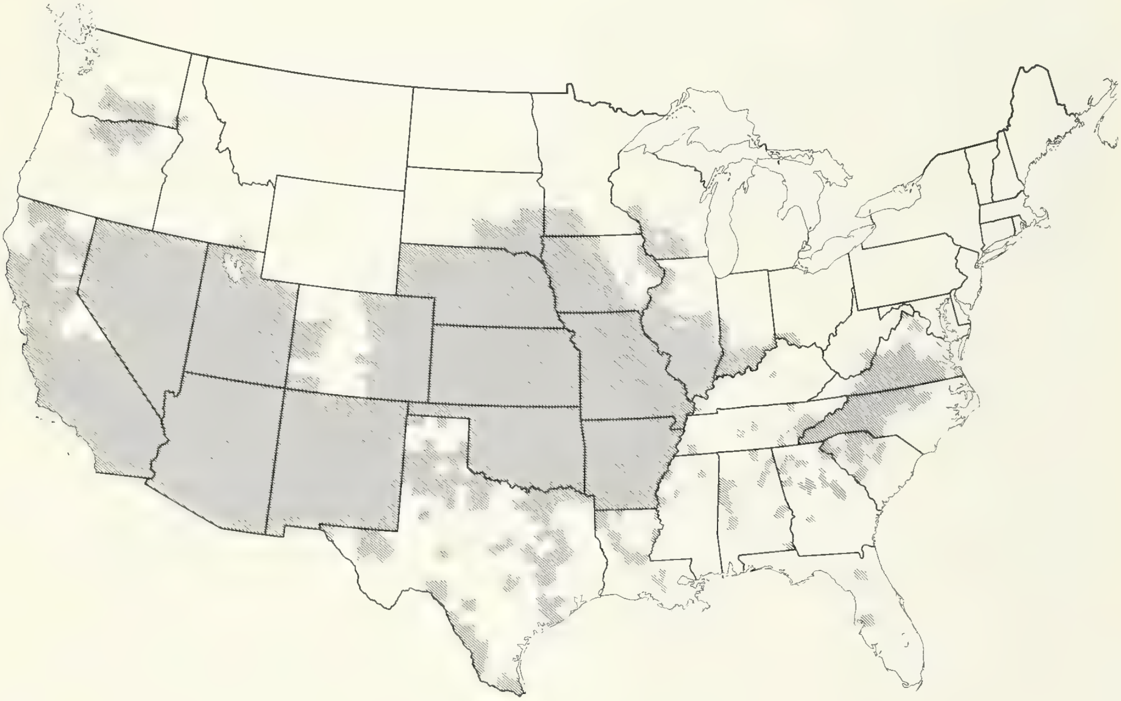
Spotted alfalfa aphid survived the winter statewide in Oklahoma despite severe winter weather during January, February and March. Populations began increasing in late February and early March in the central area. By early April, populations in scattered areas in the western half of Oklahoma were heavy enough to cause plants to become sticky. Populations dropped sharply in early May and continued generally light the remainder of 1959, a period of unusually heavy rainfall. Counts built up in a few isolated areas of the northwestern and south central sections of the State during July and August, causing some controls to be applied in limited areas. Spotted alfalfa aphid infestations in Texas were light and spotted during 1959.

Economic numbers of spotted alfalfa aphid developed only in a few localized areas of Kansas. Populations started to build up in the fall; however, excessive rain and low temperatures reduced populations before any damage was done. Numbers of spotted alfalfa aphid were also low in Arkansas except during a dry period in the fall of the year.

In Nebraska, low numbers of spotted alfalfa aphid were first recorded during the week of July 24 in the southern tier of counties from Dundy to Nuckolls. Aphids were well distributed in western and south central areas by late July, but remained light. Counts up to 150 per sweep occurred in the Republican Valley by early September. Highest infestation of the season in Nebraska, 200-1,000 per square foot, occurred in Red Willow County seedling alfalfa. Spotted alfalfa aphids in some fields were 50 percent infested by a fungus. In South Dakota, no spotted alfalfa aphids were found nor were any reported during 1959.

First spotted alfalfa aphids of the season in Missouri were taken in south central and southwest areas of the State early in May. Very light infestations existed until late July when widely scattered, heavy infestations appeared in the southeast area; counts averaged 300 per sweep in a few fields. In the southwest area of Missouri, counts ranged 3-45 per sweep. Weather conditions prevented serious damage in the State during 1959. Spotted alfalfa aphid was found in a field of alfalfa in the central area of Illinois on May 15, but apparently never spread and never reached more than 100 per 100 sweeps. Counts averaged 200-1,000 per 100 sweeps in southwestern Illinois in August. Spotted alfalfa aphid was found for the first time in two years in Indiana on September 22. Infestations were very low, although collections were made in the Wabash River bottom from Vincennes south and along the Ohio River from Mount Vernon to Clark County. Infestations followed the pattern previously noted, moving up the Wabash and Ohio River Valleys. Climatic conditions favored reentry of this aphid into Indiana.

In the southern part of the country, spotted alfalfa aphid infestations were generally light on alfalfa throughout Louisiana, as well as being generally light in Georgia. Spotted alfalfa aphid was collected on white sweetclover at Tampa, Hillsborough County, Florida, during April. The species has not previously been reported outside the Gainesville area of that State.



General Distribution of Spotted Alfalfa Aphid Since 1954

Several other aphids infested alfalfa and clover to a lesser degree, with damage not being as extensive as with pea aphid and spotted alfalfa aphid. No serious infestations of SWEETCLOVER APHID (Therioaphis riehmi) were noted in Minnesota. The species was abundant on old stands of alfalfa in the northwest district of the State early in 1959, but was never a problem. Sweetclover aphid was common in Utah but not economic. YELLOW CLOVER APHID (Therioaphis trifolii) populations built up very high in Illinois and caused some damage to clover in the east-southeast section of the State in mid-July, and heavy infestations of COWPEA APHID (Aphis medicaginis) during the spring damaged alfalfa near Bethel in Roosevelt County, New Mexico.

Heavy infestations of CLOVER APHID (Anuraphis bakeri) developed on red clover during early May in southwestern counties of Idaho and remained unusually large throughout the summer. Of clover stems checked, over 95 percent were infested in the southwestern area during May and over 90 percent were infested in the south central area of the State in late June. Elsewhere in Idaho, populations were a little above average. Clover aphid was especially abundant on alsike clover in Klamath County, Oregon, in early June, decreasing to an insignificant level by mid-July. In Washington, a light infestation of clover aphid in red clover seed fields in the Quincy area moved from stipules to heads the first week of June, increasing 10-fold the following two weeks. Most fields in the Columbia Basin and Yakima Valley were treated the last week of June. Infestations of clover aphid found on clover in Kent and Sussex Counties, Delaware, during May did not become economic.

Aphids, generally, were more abundant in total numbers and species in Nevada and caused more damage than in recent years in that State. First-cutting alfalfa in some areas of Colorado was reduced by 30-50 percent, but generally, losses were light.

MEADOW SPITTLEBUG (Philaenus leucopthalmus) was the most serious insect problem on alfalfa and clover in Indiana and the most important pest of forage in Ohio during 1959. Infestations of this pest were the heaviest in three years in central and western sections of Maryland and were heavy in scattered areas of Virginia. Hatching of meadow spittlebug in Wisconsin extended over a longer period than has been observed in the past several years.

Meadow spittlebug was the most important pest of forage crops in Ohio during the 1959 season, with first hatch being observed at Columbus on April 13 and at Wooster on April 16. Cool weather after hatch delayed development a week or more in most areas of the State. Maximum populations of 6 nymphs per stem were common in northern Ohio counties and adult populations were higher in September than at the same time in 1958. The loss to first-cutting alfalfa and clover in Ohio by meadow spittlebug was estimated at 4 percent, or $3,000,000.

Meadow spittlebug was the most serious insect problem on alfalfa and clover in Indiana during 1959. Infestations of this pest were believed to be the heaviest ever observed in the State, being most serious in eastern portions of the State. In the area of Indiana south of Richmond in Wayne County and east of Shelbyville in Shelby County, and extending to the Ohio River, infestations of meadow spittlebug were as high as 7.2 nymphs per clover stem. The total State loss due to this pest was estimated at $12,000,000.

Meadow spittlebug did not show any increase in numbers in 1959, as it has for the past several years, in northern parts of Illinois. Nymphal populations were about the same as in 1958 and adult numbers, determined by the annual fall survey, showed a decline averaging slightly more than one per sweep in northeast and northwest sections. This decline may have been due, in part, to parasites. Collections of adults in Ogle County on August 19 showed 10 percent of females parasitized. There was an average of 5.4 eggs in each female at this time. Parasitized females showed no signs of egg development.

Meadow spittlebug infestations of 1.5 nymphs per alfalfa stem were found in Grant County, Wisconsin, by May 19; large numbers were also found in Rock, Green, Lafayette, Dane and Iowa Counties. Moderate populations extended as far north as Trempealeau and Eau Claire Counties, while a light population was observed in Ashland County. Infestations of meadow spittlebug in Brown, Door and Kewaunee Counties ranged 0.7-3.2 nymphs per stem. Hatching of this species in Wisconsin extended over a longer period than has been observed in the past several years.

Meadow spittlebug was heavy on clover, alfalfa and pasture crops in scattered areas over Virginia, during 1959, with southwestern counties more heavily and generally infested than other areas. Infestations of this pest on red clover and alfalfa were the heaviest in three years in the central and western sections of Maryland. Meadow spittlebug nymphs were first found on clover the first of April, in Delaware. Adults were common to abundant on clover and alfalfa statewide by the end of May. Meadow spittlebug populations generally decreased by the end of July in Delaware, but remained common throughout the season.

Meadow spittlebug numbers were less than normal in Pennsylvania during 1959; however, control demonstrations showed an increase of 700 pounds of dry hay over the checks. In Rhode Island, nymphs of meadow spittlebug were unusually abundant on grasses and forage legumes in early June. However, fall abundance surveys in late September yielded one adult per 100 sweeps. The species remains negligible in Rhode Island. Moderate numbers of meadow spittlebug caused light damage to hay in Cumberland County, Maine, during June.

Mild infestations of spittlebugs, principally meadow spittlebug, occurred in red clover and sweetclover fields in northern Idaho during May.

LYGUS BUGS (*Lygus* spp.) were troublesome in several western states during 1959, with populations increasing to rather high counts in some areas during late summer and fall. Infestations of unspecified species increased to one per sweep in alfalfa statewide in Arizona by mid-May; and remained high, 50 per 10 sweeps in some areas, until alfalfa growth became less succulent in midsummer. Counts were again heavy in the fall in all areas of the State and were still high in November. Populations of lygus bugs in alfalfa remained relatively high throughout the season in New Mexico, counts often averaging 0.5-20 per sweep. In Colorado, losses to alfalfa from unspecified lygus bugs were generally light. *Lygus elisus*, *L. hesperus*, *L. desertus* and other species were very abundant on seed alfalfa in most areas of Utah, resulting in reduced alfalfa seed yields in that State wherever control in the bud stage was delayed or omitted.

Lygus bugs were numerous in alfalfa hay and seed fields most of the season in Nevada. Populations of unspecified species generally increased in seed fields as the season progressed, in spite of controls, especially in southern areas; but not in Humboldt County, where controls remained effective. There was some apparent resistance to insecticides in southern areas of Nevada. In California, many local, heavy infestations of *Lygus* spp. occurred on alfalfa and clover over the State.

Unspecified species of lygus bugs were apparently spotty in distribution over Oregon. Moderate numbers of these plant bugs were present in poorly treated legumes in the major alfalfa areas of the State. Blossom drop was not the problem during 1959 that it was in 1958 in the important seed-growing regions of eastern and northeastern Oregon. As usual in Washington, *L. hesperus* and *L. elisus* were the major pests on alfalfa raised for seed. Controls were generally effective during 1959. Lygus bug numbers were generally low over Idaho in May and June but increased during July. In the southwestern area of Idaho, counts of 50 per sweep occurred in fields of alfalfa in late August and 25 per sweep in fields of red clover during the month of August.

Lygus bugs reached economic importance in alfalfa seed fields in the Riverton area of Fremont County, Wyoming, the third week of June. The population of these pests was relatively low until July 1, when counts averaged about 105 per 100 sweeps in untreated fields and 18 per 100 sweeps in treated fields. The population in untreated fields reached a peak of 150 per 100 sweeps in early August, at which time a steady decline began until September 10 when damaging numbers were no longer observed. Minor damage to alfalfa hay crops occurred in other parts of Wyoming.

In South Dakoa, populations of unspecified species of lygus bugs were moderate on alfalfa through June and July. A few alfalfa seed fields in the State showed injurious infestations, but they were not as severe as were reported in 1958. Lygus bug populations were common in fields of alfalfa over Oklahoma during the growing season, but were of minor importance.

TARNISHED PLANT BUG (Lygus lineolaris) was common in legumes in several states, populations being widespread and quite abundant in some states. Tarnished plant bug infestations were light to moderate throughout alfalfa areas of Nebraska, ranging 0.5-3 per 10 sweeps. Heavier buildups occurred in July and August in east and southeast areas of the State, with up to 30 per 10 sweeps being recorded. Tarnished plant bug was present in most fields of alfalfa in Kansas during the 1959 season, but populations were generally noneconomic. Populations of this pest were light in legumes in Missouri through the season, with counts being as high as 5-12 per sweep in September.

Adults of tarnished plant bug were much more numerous early in the season in Illinois than in 1958; however, from June on, populations were similar in both years. Populations of this pest were widespread and quite abundant over Indiana.

In Maryland, tarnished plant bug was common in fields of alfalfa and clover during the 1959 season. Tarnished plant bug was abundant on clover over Delaware by late May and during June and early July. Adults and nymphal populations of this pest were high in alfalfa and clover all season. Populations decreased on alfalfa in Kent and Sussex Counties during late June, not building up again until October, when they remained numerous for the remainder of the 1959 season.

PLANT BUGS (Adelphocoris spp.) were numerous in legumes in some areas of the country during 1959, being more numerous than in 1958 in a few of these areas. ALFALFA PLANT BUG (A. lineolatus) populations over Indiana were widespread and quite abundant during 1959. Adults of this species were a little more numerous in Illinois than in 1958; however, the highest population found was only 180 per 100 sweeps.

Early season populations of alfalfa plant bug in Nebraska averaged about 4 per 10 sweeps, increasing to a peak of 25 per 10 sweeps in late August and decreasing to about 2 per 10 sweeps for the remainder of the season. Alfalfa plant bug first appeared in South Dakota in mid-May and by the first of June was present in moderate numbers on alfalfa seed crops. Adults and nymphs remained active in the State up to the first heavy frost.

Alfalfa plant bug was present on alfalfa over Delaware from June through October, with highest populations during late July and August in Sussex County.

RAPID PLANT BUG (Adelphocoris rapidus) adults were considerably more numerous throughout the 1959 season in Illinois than during 1958. Populations in some fields ranged 200-290 per 100 sweeps during the period May 7 through July 15, or later. In 1958, no field had a population exceeding 200 per 100 sweeps and very few exceeded 100 per 100 sweeps. Widespread and abundant populations of rapid plant bug occurred over Indiana during 1959.

Rapid plant bug first appeared in South Dakota the last week of May and small numbers were present throughout the summer. Counts averaged 5 per 10 sweeps from June through mid-September. In Nebraska, infestations of this plant bug remained similar to those of 1958, ranging 2-12 per 10 sweeps during late July and August and decreasing to less than one per 10 sweeps by October. Rapid plant bug infestations in Delaware were never very high on alfalfa and clover for any prolonged period, but did become abundant statewide during late June and early July.

Numbers of SUPERB PLANT BUG (Adelphocoris superbus) in alfalfa in Utah were normal during the 1959 season. Specimens of another PLANT BUG (Neurocolpus nubilus) were taken for the first time on alfalfa in Arkansas.

Populations of Adelphocoris spp. and Lygus spp. were generally higher throughout Minnesota in 1959 than they were during 1958. Nymphs of alfalfa plant bug, rapid plant bug and tarnished plant bug appeared in fields of alfalfa and clover in Illinois approximately three weeks earlier in 1959 than in 1958. Although populations in this State were quite similar during the two years, peak abundance occurred May 1-15 in 1959 and May 15-30 in 1958.

Also in Illinois, GARDEN FLEAHOPPER (Halticus bracteatus) was abundant in many clover and alfalfa fields in the southern two-thirds of the State and is believed to have caused moderate damage in some fields of these crops. Populations of garden fleahopper were much higher in Delaware during 1959 than they were in 1958, being relatively abundant throughout most of the season on alfalfa and clover.

Populations of unspecified species of STINK BUGS were lower in Nevada than they have been during the past two years, with only trace numbers occurring in alfalfa seed fields. No control treatments were necessary. In California, heavy populations of unspecified stink bugs occurred on seed clover in Imperial County.

Populations of FALSE CHINCH BUG (Nysius ericae) in Utah during 1959 were way down from those present in 1958. However, the species was spottedly numerous in alfalfa. Large numbers of adults and nymphs of another FALSE CHINCH BUG (N. raphanus) were often found in fields of alfalfa and on weeds along fence rows in early summer and in the fall in New Mexico.

Several species of LEAFHOPPERS were present on legume crops in various areas, with some damage occurring. The first record of POTATO LEAFHOPPER (Empoasca fabae) for 1959 in Nebraska occurred April 28. Populations were light in most alfalfa fields in the southeastern portion of the State. Low numbers, 5-20 per 100 sweeps, were constant in alfalfa throughout the summer. Populations of potato leafhopper were light on alfalfa statewide in Missouri through May and June. Populations of the pest increased in July and yellowing was evident in fields throughout the State.

The initial flight of potato leafhopper adults, which appeared in all fields of clover and alfalfa in Illinois between April 30 and May 6, was much heavier than in 1958. Subsequent nymphal populations in 1959 were 10 times those of 1958. Much yellowing of alfalfa occurred throughout Illinois. Very heavy and severe potato leafhopper infestations developed on second-cutting alfalfa in Indiana during July. Losses were severe, with considerable yellowing and stunting of the crop. Potato leafhopper was first collected in Ohio at Wooster on May 13, with a large migration occurring May 20. Damage was generally light in northern counties, with localized severe injury, and moderate to severe in southern counties. Damage to second and third-cutting alfalfa in Ohio was estimated at 3 percent, or $750,000.

Potato leafhopper first appeared in Minnesota May 12, ten days earlier than usual in the southern area. Generally, the 1959 population was higher than in 1958. Injury to alfalfa was apparent, especially in southern counties. Drought conditions in Minnesota reduced plant succulence in most areas and leafhopper numbers declined. In Wisconsin, potato leafhopper was first noted on April 26 at the Middleton light trap in Dane County. Counts ranged 28-71 per 100 sweeps in alfalfa in that county during late May, and adults were plentiful in light trap catches in late June. Counts of potato leafhopper during mid-July ranged from less than one to 4 per sweep in southeastern, south central and central areas of Wisconsin. There was very little control applied for this pest in 1959.

Potato leafhopper populations were high on legume forage in Vermont during 1959, but the species was not particularly abundant in New Jersey during 1959. Populations of potato leafhopper on alfalfa in Pennsylvania were very low and of importance only in the northeastern section of the State. Potato leafhopper never reached serious proportions on forage crops in Delaware during 1959. Numbers were most abundant during late June and early July on clover and alfalfa in Kent and New Castle Counties in that State. The species was of importance on some forage crops in Virginia, but had not been found by April 28 in the Catawba River Valley of Mecklenburg and Gaston Counties, North Carolina.

SIX-SPOTTED LEAFHOPPER (*Macrosteles fascifrons*) migrations into North Dakota occurred May 11 in the southeastern counties; by June 13, they had dispersed and could be found in all areas. Numbers in legumes continued to decline during June and did not increase appreciably in these crops for the rest of the season. Counts on September 18 showed 0.8 adult per sweep in fields of alfalfa near Fargo, Cass County. Populations of six-spotted leafhopper were heavy on forage legumes in Rhode Island during the last week of September, adults having been abundant on other hosts by late June.

CLOVER LEAFHOPPER (*Aceratagallia sanguinolenta*) became prevalent on clover and alfalfa in Delaware during May, remaining present statewide throughout the season.

THREE-CORNERED ALFALFA HOPPER (*Spissistilus festinus*) increased to heavy numbers in alfalfa statewide in Arizona during July. Counts remained high throughout the summer, averaging 2-5 per sweep in heavier infested fields; and infestations continued into late fall, with 1-2 per sweep common in late November. Three-cornered alfalfa hopper was light to moderate in alfalfa throughout the southern counties of New Mexico. Damaging numbers of this pest appeared on alfalfa in far west Texas and the high plains area of that State. A buildup in numbers of three-cornered alfalfa hopper began in fields of alfalfa in southeastern and south central Oklahoma during mid-July and spread into the central area of the State. Heavy populations of this species were reported primarily from the southeastern and south central areas of Oklahoma, where infestations continued through late October. Infestations of three-cornered alfalfa hopper in alfalfa remained low, generally, in Arkansas.

Several species of WEEVILS were troublesome and damaging to some legume crops during the 1959 season. The degree of infestations and the amount of damage varied with the locality and the crop involved. Several of the more important species were reported as being more numerous during 1959 than for the past several years in a few states, while infestations appeared to be lower in other states. ALFALFA WEEVIL (*Hypera postica*) was the most destructive insect in Wyoming during 1959, and was reported for the first time from Tennessee, Alabama and Kentucky during 1959, as well as extending its range in Pennsylvania, Maryland and North Carolina. SWEETCLOVER WEEVIL (*Sitona cylindricollis*) was reported from Kentucky for the first time during 1959, being found in Hart County, and was reported to have now spread to all counties in Utah. Two other WEEVILS, *Sitona californicus* and *Hypera meles* were reported from Utah for the first time during 1959.

Alfalfa weevil was the most destructive pest in Wyoming during 1959. Weather conditions in many areas of the State made controls difficult, resulting in severe damage in many fields of alfalfa to first and second cuttings. Many farmers applied controls after the first cutting. Overwintering adult populations of alfalfa weevil were generally low in the southern portion of Idaho. Eggs were first noted in early April and by May 1 were common throughout infested areas of the State. Larval stages were common by mid-May in Idaho, being extra heavy in Caribou and Bannock Counties. Populations were unusually low in southwestern counties and average elsewhere in Idaho. Overall losses in Idaho due to alfalfa weevil, including controls, amounted to $2,609,000.

Alfalfa weevil adults were common at Clarkston, Asotin County, Washington, during April; this is the first observation of this weevil since it was recorded in the State at this same location in 1955. Typical foliage injury to alfalfa was also seen at Pullman, Whitman County. Alfalfa weevil larvae averaged 3-4 per sweep and adults of the pest averaged 3-4 per 10 sweeps in Wallowa County, Oregon, in early August. The species was generally present only in normal abundance throughout southern and eastern portions of that State. Heavy populations of alfalfa weevil were also present in fields of alfalfa in Lassen County, California.

Alfalfa weevil adults were active and laying eggs in Nevada the first week of February. Development was uneven, with first and second-instar larvae and cocoons being present in the same area. Peak larval populations occurred in late May and early June in Nevada. Damage by alfalfa weevil was lower during 1959 than in 1958, due partly to the treatment of a majority of fields in February and early March. Alfalfa weevil caused damage to large acreages of alfalfa in Utah. Benefits from control in that State were estimated at $520,000. Light infestations of alfalfa weevil caused minor damage to alfalfa in San Juan County, New Mexico.

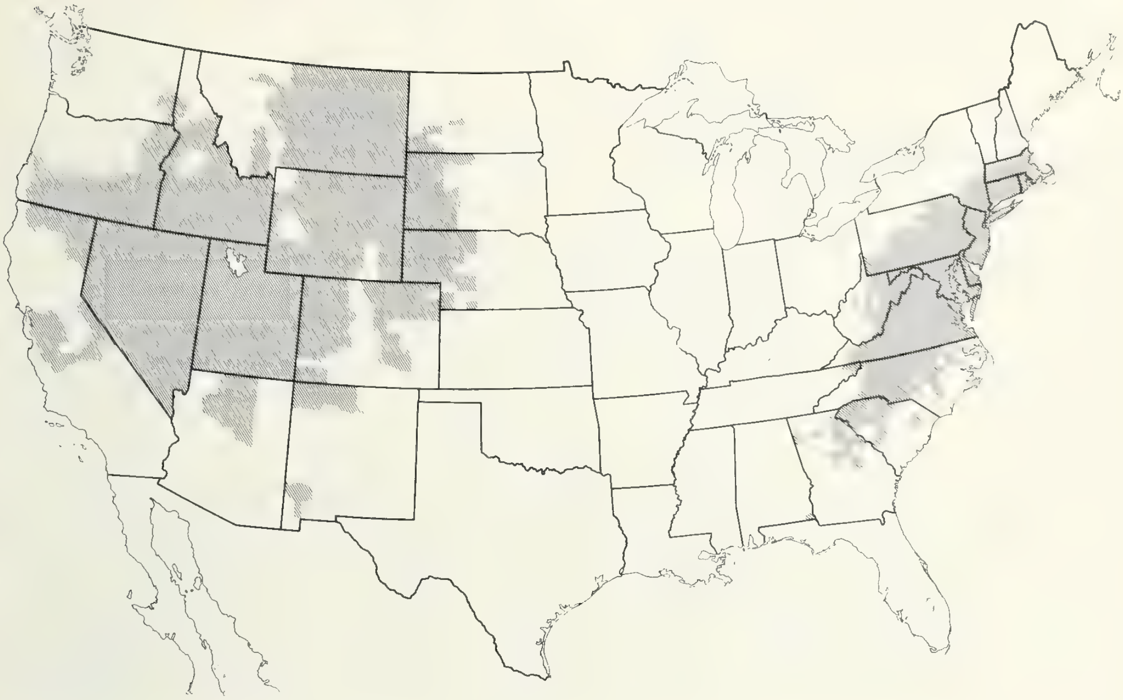
Alfalfa weevil again caused considerable damage to alfalfa in Lawrence County, South Dakota. Larvae of this pest averaged up to 97 per sweep in fields of alfalfa in Lawrence County, with many fields being treated during 1959. Damage to alfalfa by alfalfa weevil occurred in Cascade County, Montana, where control was not practiced. Larvae of this insect caused only moderate injury to alfalfa in fields in the panhandle region of Nebraska, and additional surveys did not reveal economic numbers to be present.

Early-instar larvae of alfalfa weevil first appeared in the southern portion of Rhode Island in 1959 during the first week of May. Predicted populations failed to develop during the next four weeks. Pupation was general in the State and no damage had been caused by June 4. Alfalfa weevil numbers had declined appreciably in Rhode Island from those present in 1958 and it is likely the species was delayed 1-2 years in becoming economic in the area. Counts in late September yielded one adult and 5 nearly-mature larvae of alfalfa weevil per 100 sweeps in West Kingston area alfalfa. Alfalfa weevil was a serious pest of alfalfa wherever the crop was grown in New Jersey. Damage again occurred later in the season, when stem height was 18-20 inches, rather than when the height was 10-12 inches, as in the early years of infestation in the State.

Alfalfa weevil infested 10 new counties in Pennsylvania during 1959, making a total of 47 counties now infested. Development of the species was not as prolonged as in 1958; consequently controls were more effective. Larvae of alfalfa weevil were first noted in eastern Sussex County, Delaware, the first of March, feeding on young, tender alfalfa foliage and were actively feeding over the State by the first of April. Typical extensive feeding injury was most noticeable the last half of May, particularly in fields not cut for the first time. Alfalfa weevil larvae were encountered in late August and in early October, but never in numbers. Except in a few fields, overall injury by this pest was materially lower in Delaware than during the last few years.

Alfalfa weevil caused moderate to heavy damage to untreated alfalfa in all sections of Maryland, with larval populations reaching a peak generally in mid-May. Damage was moderate to second growth in most sections. Infestations were light on alfalfa in Garrett County, a new county record, making all Maryland counties now infested with this pest. Infestations of alfalfa weevil were heavy in Virginia, with controls applied in most counties. Counties not known to be infested are Scott, Lee, Wise, Dickenson and Buchanan. Light infestations of this weevil were found in Bland, Tazewell and Russell Counties, Virginia, and infestations heavy enough to justify controls were spotted in Smyth and Washington Counties.

Larvae of alfalfa weevil were feeding in Richmond and Rowan Counties, North Carolina, in late February. Hertford County was found infested for the first time in 1959. Gross injury by this pest appeared in Lincoln County fields of alfalfa by early April, and by late April injury was approaching economic importance on clover in Anson and Wake Counties, North Carolina. Loss of first cutting would have been complete, and reduction to second-cutting alfalfa severe, in the Piedmont area of North Carolina, without controls. Infestations of alfalfa weevil were light to heavy in Georgia, with as many as 87 larvae per sweep in some fields. The pest has spread from the eastern to the northwestern part of Georgia and is now present in Floyd County. First-cutting alfalfa in untreated fields was largely lost to alfalfa weevil. Generally, the yield from treated fields as opposed to untreated fields was 3 bales to 1 bale, respectively.



Distribution of Alfalfa Weevil

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) was more abundant in Ohio during 1959 than in 1958. An average of 0.42 larva per stem damaged 0.76 bud per stem in all areas covered. Loss to first-cutting red clover in Ohio from this pest was an estimated 3 percent, or $1,200,000. Lesser clover leaf weevil larvae were very abundant and damaged many fields of clover in Illinois. Many fields had 90-100 percent of stems and buds infested during the period April 30-June 30. One southern Illinois field had 100 percent of terminal buds infested by lesser clover leaf weevil and 60 percent of buds killed by this pest. Red clover in the central area of Missouri averaged 40-70 percent stem and bud damage in late May from lesser clover leaf weevil.

Lesser clover leaf weevil severely damaged red clover in Lyon County, Nevada, with peak larval populations occurring in late April and early May. The species is becoming the limiting factor in the production of red clover in this area of Nevada. Adults of lesser clover leaf weevil were active during early April near Caldwell, Canyon County, Idaho; and feeding by this species was widespread in southwestern counties of the State by mid-May. First and second-instar larvae of this weevil appeared during late April in Canyon and Owyhee Counties, Idaho. Larvae damaged 66 percent of red clover stems in one untreated field near Parma, Canyon County, by late May. Populations of lesser clover leaf weevil in southern and central areas of Idaho were moderate to abundant during May. Extensive feeding by larvae of lesser clover leaf weevil on red clover buds, 2-5 weeks after hay cutting, did not seriously affect development of a good number of heads for seed production in the Quincy area of Washington.

Moderate to heavy infestations of lesser clover leaf weevil caused much damage to the crimson clover seed crop in Georgia. Injury to red clover by lesser clover leaf weevil was noted in Talbot and Harford Counties, Maryland, during May; and numbers of this pest on clover and alfalfa in Delaware were not appreciable.

Late-instar larvae of CLOVER LEAF WEEVIL (*Hypera punctata*) were feeding on clover and alfalfa in Delaware by mid-March and were very common on clover to the last of April, when feeding injury was most noticeable in Kent and Sussex Counties.

Clover leaf weevil was much heavier in Illinois during 1959 than in 1957 and 1958, and slightly heavier than in 1956. The species caused light to severe damage in fields of red clover, with up to 103 larvae per square foot in one field. The State average in Illinois for each week during the period April 1 through May 20, varied from 2.2 to 6.5 clover leaf weevil larvae per square foot in 1959, compared with similar averages of 1.6-3.4 for 1958. Disease killed as much as 50 percent of the larvae in some Illinois fields in early May. Clover leaf weevil was much less significant on red clover and alfalfa in Indiana in the early spring of 1959 than normally.

Infestations of clover leaf weevil were light through March in southern Missouri, but by mid-April a fungus disease had eliminated 30-50 percent of the larval populations. Clover leaf weevil populations in Kansas were noneconomic during 1959. Very light larval infestations of clover leaf weevil were present in all fields of alfalfa examined in southwestern and south central counties of Idaho in late April and in Lewiston County in early April. Feeding damage was light over the State. Populations of clover leaf weevil were medium to heavy on alfalfa in Siskiyou County, California, and infestations of EGYPTIAN ALFALFA WEEVIL (*Hypera brunneipennis*) occurred on alfalfa in San Diego, Orange and Los Angeles Counties in that State.

Infestations of a CLOVER WEEVIL (*Hypera meles*) were moderate to heavy in Georgia, causing much damage to the crimson clover seed crop in that State during 1959.

SWEETCLOVER WEEVIL (*Sitona cylindricollis*) was abundant and damaging to sweetclover in northwestern counties of Ohio during 1959. In Illinois, sweetclover weevil was more numerous and destructive during 1959 than for several years. Many new sweetclover seedlings were destroyed and some old stands of sweetclover were badly damaged, especially where mixed with other clover and alfalfa. An old stand of sweetclover in Illinois averaged 27 sweetclover weevils per square foot the week of April 9-15. Feeding damage by sweetclover weevil was evident early in all areas of Minnesota, but no serious infestations developed.

In late May, most fields of seedling sweetclover in the northwest area of Missouri showed sweetclover weevil leaf-feeding injury to 100 percent of the plants. Sweetclover weevil damaged a small amount of sweetclover in the northeast area of Kansas during 1959. Damage by sweetclover weevil was reported in many fields of sweetclover in southeast areas of Nebraska. Surveys showed fields with averages of 20 per 100 sweeps during May and June. Injury by sweetclover weevil in Nebraska during 1958 and 1959 has increased over that of past years.

Sweetclover weevil has now spread to all counties of Utah. Damage in that State was rarely serious during 1959. Sweetclover weevil adults became active during April in Nez Perce County, Idaho, with heavy feeding damage noted in fields of sweetclover. Severe, spotty infestations developed in some fields of sweetclover in Power County during May. Light to moderate populations of sweetclover weevil developed in the northern area of Idaho during May, with relatively light damage. In the eastern area of Idaho, adults of sweetclover weevil were general during May but plants outgrew feeding damage. In Oregon, the sweetclover weevil population increased to a higher level during 1959 than in 1958, being especially heavy in Wallowa County.

Large numbers of CLOVER ROOT CURCULIO (*Sitona hispidula*) adults were active in fields of red clover and alfalfa in southwestern Idaho in early April, with near-normal feeding damage noted later. Some adult feeding damage was noted in northern counties of the State in early May. Clover root curculio populations were generally low in south central and eastern areas of Idaho in 1959.

Observations in scattered fields of 1 and 2-year-old alfalfa in Missouri revealed stunting of growth, yellowing and purpling of leaves and, in some instances, stands being killed. Root examination showed considerable clover root curculio larval damage. A survey conducted in three counties, to determine the extent of this damage, showed the number of feeding scars per 6-inch tap root sample increased with the age of the stand; the average number of scars ranged from 5.2 on 1 to 1.5-year-old alfalfa to 27.9 on 10-year-old alfalfa. It was not proven that *S. hispidula* was responsible for the above mentioned maladies. Counts of adult clover root curculio ranged 4-15 per sweep on alfalfa and ladino clover in late October and early November in Missouri.

Adults of clover root curculio were present on clover and alfalfa in Delaware most of the season but were low in numbers, causing little foliage damage.

Adults of PEA LEAF WEEVIL (*Sitona lineata*) began appearing in the Willamette Valley of Oregon during the week of July 13 and were present in approximately normal numbers on legumes. No specimens of pea leaf weevil were found during a survey in the Columbia Basin of Washington during the spring of 1959, although a specimen was collected in August 1958 near Quincy.

A WEEVIL (*Sitona scissifrons*) occurred on alfalfa in South Dakota in most counties east of the Missouri River during 1959. The weevil was found in nearly all fields of alfalfa, but populations were not high enough to cause much damage. Counts for the season in South Dakota averaged about 4 per 10 sweeps.

CLOVER SEED WEEVIL (*Miccotrogus picirostris*), which was found for the first time in Illinois during 1958, was not collected in that State during 1959. In Washington, up to 40 adults of clover seed weevil per 25 sweeps occurred in white clover seed fields in Whitman County by June 30 and bloom was about 20 percent brown. Treatments were successful in most cases. No specimens of clover seed weevil were found in new, isolated fields in Garfield County, Washington. Heavy, local infestations of COWPEA CURCULIO (*Chalcodermus aeneus*) occurred in the Griffin area of Spalding County, Georgia.

Several leaf beetles occurred on forage crops during 1959. Adults of both NORTHERN CORN ROOTWORM (*Diabrotica longicornis*) and SOUTHERN CORN ROOTWORM (*D. undecimpunctata howardi*) were very abundant in fields of clover and alfalfa in Illinois during 1959. Adults of southern corn rootworm were common on alfalfa, clover and cover crops in Delaware throughout the season, with an increase noted on alfalfa during October. In Louisiana, southern corn rootworm adults averaged 132 per 100 sweeps on burclover in Iberville Parish in January. Adults of southern corn rootworm appeared on alfalfa the first of June in the east central area of South Dakota and averaged 3 per 10 sweeps.

Populations of PALE-STRIPED FLEA BEETLE (Systena blanda) were noticeably higher in Delaware during 1959 than they were in 1958 on alfalfa and clover, particularly during July and August. Another FLEA BEETLE (Systena taeniata) infested alfalfa in Colorado, but losses were generally light.

Adults of a BEETLE (Colaspis sp.) were abundant in many fields of red clover in Illinois in July, averaging 405 per 100 sweeps in 10 fields in the east-southeast and southeastern sections of the State during the period July 9-15. In Louisiana, counts of Colaspis sp. averaged 101 per 100 sweeps in lespedeza in Acadia Parish.

Several other coleopterous species were found infesting alfalfa, clover, vetch and other forage crops in several areas. ASH-GRAY BLISTER BEETLE (Epicauta fabricii) infested alfalfa in Colorado, but losses were light. Ash-gray blister beetle was first noted in South Dakota the first of June and averaged 3 per sweep on alfalfa during June and July. BLACK BLISTER BEETLE (Epicauta pennsylvanica) occurred on alfalfa statewide in South Dakota during August and September, averaging 3 per 10 sweeps. Spotty, heavy infestations of unspecified species of blister beetles damaged alfalfa in Grant and Harding Counties, New Mexico; but were relatively scarce throughout the season in Illinois. However, Epicauta atrata, usually found on dandelion and other weeds, occurred on heads of red clover in western Illinois during 1959. In Delaware, adults of Epicauta sp. were common on alfalfa in New Castle and Sussex Counties in July and August, with very light feeding injury.

A NITIDULID (Meligethes nigrescens) first appeared in Oregon on April 3 and built up slowly, with very low numbers present on red clover by July 10. A rapid buildup followed, with populations so heavy that rapid reinfestation resulted in recommended control dosages being only temporarily effective. Also in Oregon, VETCH BRUCHID (Bruchus brachialis) emerged from hibernation shortly before April 18 and was normal in abundance during the 1959 season. However, infestations of vetch bruchid caused heavy damage to vetch in the north central area of Texas, with population counts twice those of 1958. CLOVER ROOT BORER (Hylastinus obscurus) caused some minor loss in localized fields in the Willamette Valley of Oregon. GREEN JUNE BEETLE (Cotinis nitida) was of some importance on forage crops in Virginia in 1959. Damage to forage throughout Idaho by numerous unspecified species of WIREWORMS appeared to be generally above average for 1959.

MITES were responsible for some severe damage to clover and alfalfa during 1959. Mites were more abundant in total numbers and species and caused more damage than in recent years in Nevada. CLOVER MITE (Bryobia praetiosa) infestations were high and damage to alfalfa was heavy in Churchill and Douglas Counties, Nevada. Damage was most apparent in sandy soils.

Unspecified species of SPIDER MITES were generally prevalent in California early in 1959 but remained more or less stationary until summer, when they showed as local heavy populations. Alfalfa, seed alfalfa, clover, horsebeans and grass crops were all affected by light to heavy populations over the State. Infestations of Tetranychus spp. on alfalfa were above normal statewide in Nevada, but no treatments were made, although several fields were very severely damaged in Lyon County. Spider mites, mainly FOUR-SPOTTED SPIDER MITE (Tetranychus canadensis), were present in many fields of red clover in southern Illinois during May. An average of 18.2 mites per clover leaf were found in three fields of clover in Gallatin County on May 23. Unspecified species of spider mites severely stunted red clover in eastern Allegany County, Maryland, during May.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) was heavier than normal on red clover and alfalfa in the Ontario-Nyssa area of Oregon during 1959. Unusually high populations of this spider mite caused leaf drop in some fields of established alfalfa plantings in the area. Some severe infestations of two-spotted spider mite developed in fields of red clover in Canyon County, Idaho, during mid-June; and some severe damage by this mite occurred to fields of alsike clover near Grangeville during July. Injury by two-spotted spider mite was generally light on alfalfa and clovers in Utah during 1959.

STRAWBERRY SPIDER MITE (Tetranychus atlanticus) was very abundant on clover in Kent County, Delaware, where several fields were apparently killed outright by high infestations.

THRIPS damaged alfalfa in a few western areas during 1959. BEAN THRIPS (Hercothrips fasciatus) was severe on alfalfa in Sacramento and Yolo Counties, California, and populations of unspecified species of thrips were high on many crops in California, causing damage to alfalfa plantings in many growing areas of the State during 1959. Infestations of another thrips (Frankliniella occidentalis) were extremely heavy in some fields in all alfalfa-growing areas of Arizona throughout 1959, with considerable damage to terminal growth evident in some cases.

CLOVER SEED CHALCID (Bruchophagus gibbus) apparently caused above average economic damage in Utah during 1959. Adults of clover seed chalcid emerged during late May in Canyon County, Idaho. Seed reduction in the area was not assessed but damage was considered light. Infestations of clover seed chalcid were severe in alfalfa seed-growing areas of Nye County, Nevada. Fields producing seed for the first time had at least a 50-percent reduction in yield and many older fields were equally hard hit in that area of the State. High populations of clover seed chalcid occurred in Imperial County, California.

GRAY GARDEN SLUG (Deroceras reticulatum) was serious on crimson clover and hairy vetch in the Willamette Valley of Oregon during late summer and fall in 1959.

Soybean and Peanut Insects: Several lepidopterous pests occurred on soybeans in several areas, causing varying degrees of damage. Infestations also varied in intensity. GREEN CLOVERWORM (Plathypena scabra) damaged soybeans in many areas of Arkansas in early September. Damage was primarily due to foliage feeding although there was some pod feeding. Larval populations of green cloverworm ranged 1-5 per foot of row and damaged soybean leaves in the north central area of Missouri during late August. Larvae ranged 2-8 per foot of row in the southern area of the State through August and September. Some damage occurred to late soybeans in southeastern Missouri in early September. Green cloverworm numbers were very scarce in fields of soybeans in Illinois during 1959.

Surveys in Nebraska during late August showed slight increases of green cloverworm over 1958 on soybeans. The highest count recorded in 1959 was 4 per 10 sweeps in the east central area of the State. Several heavy infestations of green cloverworm occurred on soybeans in Delaware during 1959, while in Maryland, infestations of this pest in soybeans were about normal.

VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) stripped soybean foliage in many fields in the Coastal Plain area of North Carolina and up to 50 percent of pods were injured by this species and corn earworm in the middle counties of the same area. Velvetbean caterpillar was a serious problem on soybeans throughout the southern part of Georgia during 1959. In Louisiana, adults of velvetbean caterpillar were first observed on soybeans August 1 in St. Landry and Tensas Parishes. Light larval infestations of this pest occurred on the same crop in Acadia Parish by the end of August. Larvae of this pest were also common on soybeans during October over Delaware.

In Missouri, in late May, larvae of VARIEGATED CUTWORM (Peridroma margaritosa) migrating from alfalfa, red clover and grassy areas, caused severe injury to marginal rows of soybeans. Moth emergence was high in southeast Missouri in early June.

CABBAGE LOOPER (Trichoplusia ni) larvae were present on soybeans over Delaware in late season but populations remained low. Cabbage looper was present on soybeans in Virginia during 1959 but presented no problem. In Georgia, however, cabbage looper infestations were a problem on soybeans.

There was some feeding by BEET WEBWORM (Loxostege sticticalis) on soybeans in Minnesota, but no serious damage was observed. A TORTRICID (Tortrix pallorana) was found infesting soybeans in Kent County, Delaware, where it was common on foliage, particularly along the edges of the fields. Larvae of an unspecified PLUME MOTH were found feeding on leaves of soybeans in central and northwestern areas of Illinois during 1959, with as many as 20 per 100 sweeps being recorded.

ARMYWORM (Pseudaletia unipuncta) was present on soybeans in several counties of Virginia during 1959. Although this pest caused heavy damage to several grain crops in these areas, it was of minor importance on soybeans. FALL ARMYWORM (Laphygma frugiperda) averaged 114 per 100 sweeps in a field of soybeans in St. Landry Parish, Louisiana, and this pest was also a problem on soybeans in Georgia. YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) was present on soybeans statewide in Delaware during the 1959 season. In Pennsylvania, outbreaks of yellow-striped armyworm occurred in several areas in the southern half of the State, with some requiring controls to prevent severe crop losses.

Several leaf beetles were found infesting soybeans during 1959. A CORN ROOTWORM (Diabrotica sp.) was observed feeding on pods of late soybeans in southeastern Missouri in October. Also in Missouri, but in the southwestern area of the State, damage to seedling soybeans caused by BEAN LEAF BEETLE (Cerotoma trifurcata) was evident in late May. Populations of 1-7 adults were common on soybeans throughout the State during the growing season. Adults of bean leaf beetle were observed feeding on pods of late soybeans in southeast Missouri in October. Bean leaf beetle caused a small amount of damage to seedling soybeans in southwestern Illinois. In Indiana, contrary to the trend in recent years, there was no increase in the numbers of bean leaf beetle on soybeans; and the species was not considered economically important during 1959. Bean leaf beetle adults were abundant most of the season in Delaware, particularly during June when moderately heavy feeding injury occurred in Kent and Sussex Counties on soybeans.

Adults of a LEAF BEETLE (Colaspis sp.) numbered up to 240 per 100 sweeps on soybeans in late June and early July in the southern half of Illinois. Adults of Colaspis sp. were observed feeding on soybeans in southern counties of Missouri during the last half of July and counts ranged 1-7 per foot of row. Damage by Colaspis sp. to soybeans was observed in local northeastern areas of Arkansas. Overwintering larvae of the beetle caused damage to soybean seedling roots.

LOCUST LEAF MINER (Chalepus dorsalis) migrated from black locust trees into soybeans in central Illinois and did considerable feeding on the soybean leaves. Also in Illinois, SWEETCLOVER WEEVIL (Sitona cylindricollis) was reported, although the report was unconfirmed, to number 20-30 per linear foot in one field of soybeans in Macoupin County.

PALE-STRIPED FLEA BEETLE (Systena blanda) populations in Delaware during 1959 were noticeably higher than in 1958 on soybeans, particularly during July and early August.

In Missouri, small spots in scattered fields of soybeans throughout the southern area of the State were defoliated by BLISTER BEETLES (Epicauta spp.) during the last half of July. MARGINED BLISTER BEETLE (Epicauta pestifera) caused considerable feeding injury to soybeans in southeast Kent County, Delaware, during mid-July, and was common in late August. Adults of unspecified blister beetles occurred on soybeans in New Castle County the first part of October.

JAPANESE BEETLE (*Popillia japonica*) was of minor importance on soybeans in Virginia and damage to this crop in Indiana was slight and probably noneconomic.

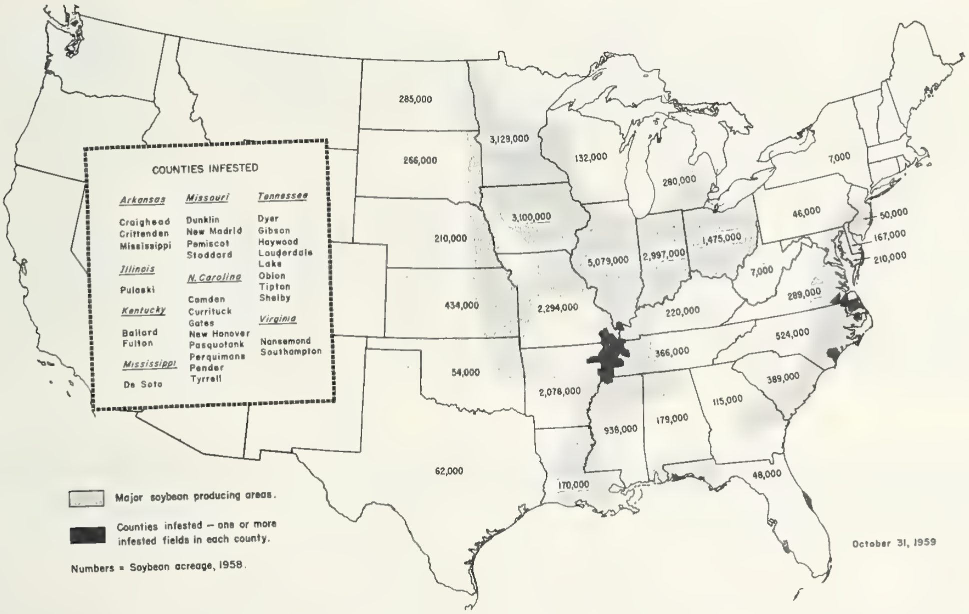
TARNISHED PLANT BUG (*Lygus lineolaris*) adults and nymphs were generally common on soybeans all season over Delaware. Infestations of RAPID PLANT BUG (*Adelphocoris rapidus*) were never high on soybeans for any prolonged period of time, but did become abundant statewide during late June and early July. Also in Delaware, populations of GARDEN FLEAHOPPER (*Halticus bracteatus*) were much higher during 1959 than in 1958, being relatively abundant throughout the season on several crops, especially soybeans. In western Illinois, garden fleahopper was present in soybeans in numbers up to 600 per 100 sweeps in early July.

Unspecified MITES were abundant in many fields of soybeans in southern Illinois and caused much curling and russeting of leaves. Unspecified species of SPIDER MITES were moderate to heavy on soybeans on the Eastern Shore of Maryland during late June and July, and STRAWBERRY SPIDER MITE (*Tetranychus atlanticus*) built up on soybeans in Kent and Sussex Counties, Delaware, in mid-July.

A THRIPS (*Sericothrips variabilis*) was common to abundant on soybeans in Delaware, statewide, by the first of June and remained common throughout the season, being noticeably more abundant in Kent and Sussex Counties. Multiple yellow spots appeared to be the injury caused by this thrips in Delaware during the early part of the growing season. In Maryland, unspecified species of thrips were abundant on soybeans during the summer of 1959.

A MILLIPEDE (*Pleuroloma butleri*) was reported cutting off soybeans at Elnora, Daviess County, Illinois.

SOYBEAN CYST NEMATODE (*Heterodera glycines*) - There has been a rapid buildup of populations in several states in 1959, with some growers sustaining a complete



Distribution of Soybean Cyst Nematode

loss of their crop in a limited number of fields. Surveys for soybean cyst nematode to December 31, 1959, reveal more than 34,600 acres infested on 791 properties in the States of Arkansas, Illinois, Kentucky, Mississippi, Missouri, North Carolina, Tennessee and Virginia. The percent of damage this pest caused was widely varied. In some fields only small spots were affected but in others as much as 90 percent of the field showed nematode damage. Severe injury was experienced by a number of Arkansas and Missouri growers; and in Lake County, Tennessee, it was estimated that this nematode cost the growers $360,000 in 1959. A map showing this distribution of the species in the United States is shown on the preceding page. The State of Illinois was found infested for the first time during the year.

Peanuts in Georgia were attacked by light to heavy, and sometimes severe, infestations of several pests common to this crop. VELVETBEAN CATERPILLAR (*Anticarsia gemmatalis*) was general and heavy throughout the peanut area of the State, with many fields being completely defoliated. CABBAGE LOOPER (*Trichoplusia ni*) infestations were light during 1959, as were those of FALL ARMYWORM (*Laphygma frugiperda*). An unspecified species of climbing CUTWORM defoliated large acreages of peanuts in Early County, Georgia, during the first part of August. RED-NECKED PEANUTWORM (*Stegasta basqueella*) infestations were light to moderate on peanuts in the State during 1959; and infestations of SOUTHERN CORN ROOTWORM (*Diabrotica undecimpunctata howardi*) were light to heavy on this crop in Georgia. This latter instance is unusual, as southern corn rootworm is rarely reported as damaging peanuts. JAPANESE BEETLE (*Popillia japonica*) was of minor importance on peanuts in a few local areas of Virginia.

A BURROWING STINK BUG (*Pangaeus bilineatus*) has been present in many peanut fields in Georgia where considerable damage has been done to peanuts. This so-called "physiological damage" may be caused by this pest. In Dooly and Crisp Counties, 20 percent of the Spanish peanuts were graded oil stock. Infestations of unspecified species of THRIPS were light to heavy on peanuts in Georgia during 1959, but mostly light to moderate in nature.

Peanuts in a few other states were infested and damaged by some of these same pests, as well as a few others. Red-necked peanutworm infestations severely damaged peanuts in the Winter Garden area of Texas and caused some damage to that crop in the southwest, west cross timbers and central areas of that State. In Oklahoma, infestations of red-necked peanutworm were heavy in peanuts in some central and southwestern areas during the summer, but populations were generally light across the State.

Southern corn rootworm caused considerable loss in yield of peanuts in one area of Virginia where controls failed. Unspecified species of LEAFHOPPERS caused yield losses estimated up to 200 pounds per acre of peanuts in the Coastal Plain of North Carolina because rains prevented the application of controls. Damaging numbers of THREE-CORNERED ALFALFA HOPPER (*Spissistilus festinus*) appeared on peanuts in the Winter Garden area of Texas during 1959.

Pasture and Grass Insects: The larvae of several species of Lepidoptera infested pastures and various grasses during the 1959 season. Spring populations of ARMYWORM (*Pseudaletia unipuncta*) were light in Maryland, but a moderate outbreak occurred on grasses in the southern area of the State and on the Eastern Shore during August. The species also heavily damaged pastures and cover crops in several counties of Virginia during 1959. In Georgia, infestations of armyworm were heavy on Coastal and common Bermuda grasses, as were infestations of FALL ARMYWORM (*Laphygma frugiperda*). Fall armyworm populations in Texas were light in pastures during 1959 as compared with 1958.

An outbreak of BRONZED CUTWORM (Nephelodes emmedonia) caused considerable damage in early spring bluegrass pastures in several southwestern counties of Pennsylvania. ARMY CUTWORM (Chorizagrotis auxiliaris) damaged much less range plant acreage in Utah than normal during the spring of 1959. An unknown species of CUTWORM severely damaged grasses in northeastern Montana, and unspecified species were destructive to turf in a few localized areas of Ohio.

Populations of STALK BORER (Papaipema nebris) were higher than usual in Kansas during 1959, but damage to bromegrass was heavy only in a few localized areas of the State. Infestations of a GRASSWORM (Mocis sp.) were heavy on Coastal and common Bermuda grasses in Georgia. SOD WEBWORMS (Crambus spp.) were reported in large numbers in the Canton and Cleveland areas of Ohio. In Rhode Island, Crambus sp. caused considerable damage in South Kingstown, with adults appearing in abundance in late September. Damage to lawns by several species of sod webworms appears to be increasing in New Jersey. Larvae of a sod webworm, Crambus sp., severely damaged a field of Merion bluegrass in Yamhill County, Oregon; the first injury observed in the western area commercial seed fields since 1956. Larval populations of various species of sod webworms, especially Crambus topiaris, were heavier than normal in the fall in Washington, with up to 50 per square foot in grasses grown for seed in the Spokane area. Populations were probably high because prolonged cool and moist weather in the late summer promoted survival of eggs and small larvae. Damage to lawns was also reported in the Puyallup area of Washington.

Among the several species of Coleoptera reported as infesting grass and turf, two constituted new State records. A SCARAB (Gronocarus autumnalis) was collected on St. Augustine grass in Panama City, Bay County, Florida, on November 11, 1959, for a new State record for Florida. It was also collected again from the same host on December 7, 1959, in the same locality. A WEEVIL (Hyperodes anthracinus) was collected in turf in Nassau County, New York, during 1959 for a first State record of this species in that State.

Several other species of Coleoptera were reported as infesting various grasses during 1959. BILLBUGS (Calendra spp.) were noticeable around lawns in Benton County, Oregon. However, injury to grass was not apparent, larval damage being less than in 1958. A CERAMBYCID (Prionus sp.) infested Bahia grass in several fields in Seminole County, Georgia, with an average of 6 larvae per square foot in one field. The pest fed on grass roots, causing the plants to die.

NORTHERN MASKED CHAFER (Cyclocephala borealis) was more numerous in Ohio than during 1958 and caused considerable damage in the Cincinnati and Wooster-Akron-Canton areas of that State during 1959. Northern masked chafer was abundant on untreated turf and the secondary effect of skunks made the fairways of one golf course unplayable. Grubs of GREEN JUNE BEETLE (Cotinis nitida) were the most common grubs infesting pastures in North Carolina during 1959. The population of WHITE GRUBS (Phyllophaga spp.) was much lower in Ohio during 1959 than it was during 1958 and unspecified species damaged numerous lawns in many counties and communities in Utah.

Several species of PLANT BUGS, largely Stenotus binotatus, Leptopterna ferrugatus and Thyrillus pacificus, damaged grasses in scattered areas of Utah during 1959. Also in Utah, populations of FALSE CHINCH BUG (Nysius ericae) were way down from those that were present during 1958. However, the pest was spottedly numerous on the range and about roadsides, and invaded a number of homes in Salt Lake County.

Much damage was caused to St. Augustine grass lawns by a CHINCH BUG (Blissus leucopterus insularis) throughout the southern portion of Louisiana during 1959 and infestations were heavy and general on St. Augustine grass in Georgia. HAIRY CHINCH BUG (Blissus leucopterus hirtus) destroyed many lawns in the Akron area of Ohio and was again abundant and destructive to bent grass lawns in the metropolitan counties of New Jersey during the 1959 season. In Georgia, a SPITTLEBUG (Tomaspis bicincta) was a serious problem on Coastal and common Bermuda grass throughout the middle and southern parts of the State.

YELLOW SUGARCANE APHID (*Sipha flava*) was reported by the hundreds on pangola grass in a 10-acre pasture at Iverness in Citrus County, Florida, in mid-April and seriously injured large areas of the same host at Gainesville, Alachua County, during the same period. Another APHID (*Hyalopteroides dactylidis*) moderately infested orchardgrass locally in Utah. In Washington, this aphid has been found in widely scattered areas throughout the State since it was first recorded at Pullman in 1955; however, it has not been found in orchardgrass seed fields in Spokane County.

Adults of SIX-SPOTTED LEAFHOPPER (*Macrosteles fascifrons*) were abundant on grasses and weeds in some areas of Rhode Island by late June. Populations were again heavy on grasses during the last week of September. An unspecified GROUND PEARL infested centipede and St. Augustine grass in Valdosta, Lowndes County, Georgia.

HARVESTER ANTS (*Pogonomyrmex* spp.) were damaging to range in some western areas of the Nation during 1959. In Oklahoma, populations of *P. barbatus* were considerably lower than those reported during 1958. *P. occidentalis* caused its usual damage in Utah during 1959 by keeping many thousands of acres of range and forage croplands bare of vegetation. *P. occidentalis comanche* and *P. maricopa barnesi* were troublesome in the Washington-St. George area of Utah. In Hidalgo, San Miguel, Socorro and Rio Arriba Counties, New Mexico, *P. occidentalis* and/or *P. barbatus fuscatus* are becoming a serious problem on rangeland. Also in New Mexico, another ANT (*Formica cinerea montana*) became a serious problem during the summer of 1959 in pastureland near Cerillos, Santa Fe County, because of the large number of mounds present.

Several other pest species of grasses were reported during 1959. Among these was a new species of WHITEFLY (*Aleurocybotus* n. sp.) collected on grass December 12, 1958, at Gainesville, Alachua County, Florida. A SOD FLY (*Metoponia rubriceps*), previously known in California only in the city of San Francisco, extended its range in that State into San Mateo County during 1959. The total numbers of a LEAF MINER (*Phytomyza nigra*)in fescue seed fields in Oregon were much lower during 1959 than they were in 1958.

Large numbers of a FIELD CRICKET (*Acheta* sp.) were present in meadows and pasture areas throughout Rhode Island in early September and caused considerable concern as they entered houses with the advent of cold nights. CLOVER MITE (*Bryobia praetiosa*) was also abundant in early May in meadows and pasture areas of Rhode Island. DATE MITE (*Oligonychus pratensis*) became severe on wheatgrass plantings in Modoc County, California, causing damage associated with drought.

Pests of Miscellaneous Crops: Moderate to severe infestations of BEET WEBWORM (*Loxostege sticticalis*) occurred over a wide area of North Dakota, causing injury to several crops, including flax. Some feeding by beet webworm also occurred on flax in Minnesota, but no serious damage was observed. In Montana, this pest damaged some flax in Teton County. SIX-SPOTTED LEAFHOPPER (*Macrosteles fascifrons*) migrated into the southeastern counties of North Dakota on May 11; leafhoppers had dispersed by June 13 and could be found in all areas. Counts averaged 0.1-1.0 per sweep on several crops, comparable to data for the same period in 1958. Numbers of six-spotted leafhopper continued to decline during June and did not increase appreciably in flax for the rest of the season. In California, heavy populations of unspecified species of STINK BUGS occurred on flax in Imperial County.

A complex of SUNFLOWER MOTH (*Homoeosoma electellum*), BANDED SUNFLOWER MOTH (*Phalonia hospes*) and a tephritid occurred in numerous fields of sunflower in Cavalier and Traill Counties, North Dakota, with economic infestations in many of the fields. Populations of unspecified THRIPS were high on many crops in California, causing damage to safflower plantings in many of the growing areas of the State during 1959.

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON 25, D. C.

Official Business

POSTAGE AND FEES PAI
U. S. DEPARTMENT OF AGRICULTUR